Corporate Roundtable on
development of strategies
for the Environment

CoRE Conference on "Corporate Strategies for Sustainable Development"

Venue: TERI, India Habitat Centre,
Lodhi Road, New Delhi - 110 003

April 17, 2001

CoRE Conference On

"Corporate Strategies for Sustainable Development"

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Agenda

09:00 – 09:30	*Registration*
09:30 - 09:45	*Welcome & Opening address* **Dr Leena Srivastava**, Director, Regulatory Studies and Governance Division, TERI
09:45 – 10.00	*About CoRE* **Mr R K Narang**, Distinguished Fellow, TERI
10.00 - 11.00	***Green profits – corporate perspectives and experiences*** ▪ Opportunities for generating profits while moving towards sustainability ▪ Success stories / Case studies ***Speakers*** **Dr Arun Viswanath,** Associate Director, Procter & Gamble Ltd., Mumbai **Mr Ajay Narayanan,** Vice President, IDFC, Chennai **Mr B R Tyagi,** IOC, Faridabad
11:00 – 11:15	*Tea*
11:15 – 12:15	***Trade & environment – Opportunities & Threats*** ▪ Implications of links between trade and environment ▪ Developments under WTO ***Speakers*** **Mr Preet Malik,** Ex- IFS & former Secretary to GOI, New Delhi **Dr T R Manoharan,** TERI, New Delhi
12:15 – 13:15	***Eco-Standards*** ▪ Use of eco-standards ▪ ISO 14000 standards, indicators, benchmarking ***Speakers*** **Mr K P Nyati,** Head, Environment Management Div., CII, New Delhi *(Chairperson)* **Mr S V Jamble,** General Manager (Resource conservation and Envt. Mgmt.), INDAL, Belgaum **Ms Monika Mahajan,** TERI, New Delhi **Mr Ketan Deshmukh,** Lloyd's Register Quality Assurance Ltd., Mumbai

13:15 – 14:00	*Lunch*
14:00 – 15:00	***Corporate Social Responsibility***

- Emerging trends on corporate social responsibility
- Corporate transparency - reporting on environmental and social performance
- Local community initiatives

Speakers

Mr Rajesh Rawat, Reliance Industries Ltd., Mumbai
Mr Y K Saxena, Asst. Vice President, Gujarat Ambuja Cements Ltd., New Delhi
Mr S B Budhiraja, Senior Advisor, United Nations, The Global Compact, Gurgaon

15:00 – 15:15	*Tea*
15:15 – 16:30	*Presentation / discussion on various topics of interest to CoRE members*

- Barriers to implementation of cogeneration (**Mr Pradeep Dadhich**, TERI)
- Pollution from sugar mills and remedial measures required (**Mr Ashish Awasthi**, Deputy Manager, M/s. Triveni Engineering Industries Limited)
- Biotechnological applications to reduce pollution (**Dr D K Tuli**, IOC, Faridabad)
- Concept notes identified during IInd CoRE meeting
  - Green belt development
  - Development of Eco Villages
  - Hazardous waste inventory and management
  - Tissue culture application in afforestation activities
- Environmental Policy statement analysis (**Ms. Dhenuka Srinivasan**, TERI)

16:30– 17:00	*Summarizing & Closing* **Mr R K Narang,** TERI

Proceedings (summary)

of

CoRE Conference on Corporate Strategies for Sustainable Development

Corporate Roundtable on development of strategies for the Environment

17 April, 2001

Venue: TERI, India Habitat Centre, Lodi Road,

New Delhi-110 003,

Welcome Address

Dr Leena Srivastava
Director, Regulatory Studies and Governance Division
TERI, New Delhi

Dr Leena Srivastava said that TERI has identified the need for various interventions that could be organized in a proactive manner in an attempt to combat environmental problems. It wanted to focus, especially on the corporate sector, which is one of the major stakeholders in the process of development and also on environmental degradation; hence the initiative of setting up CoRE. The industrial sector is seen as a major contributor to environmental pollution and resource degradation. However, sustainable development has become an international movement with corporate sectors from developed, developing, and newly industrialized countries emerging as its leaders. In response to global environmental problems, companies like BP (British Petroleum), Shell, etc are taking important initiatives towards renewable energy. The Japanese industry has focussed more on local environmental problems and has taken zero emissions initiatives in all spheres of its industrial activities. Dr Srivastava said that the Indian industrial sector has to demonstrate, in a much more apparent manner, its commitment to the environment, thereby affecting transition to sustainable development.

Details of CoRE

Mr R K Narang
Distinguished Fellow & Convenor CoRE
TERI, New Delhi

Mr R K Narang presented the details of the CoRE initiative. He stressed the need for action from industries in environmental protection and sustainability. The CoRE initiative implies involving the corporate sector to initiate strategies of being proactive towards issues of corporate sustainability. TERI would thus act as a catalyst as well as a coordinator to bring the corporates together to discuss common issues and problems. This could serve to form a green movement led by the corporates themselves. He said that CoRE is a corporate roundtable for initiatives on the environment having a network of leading companies as its members. It serves as a platform for the industry to put forward objective analysis on what they should do in the future. It forms a partnership between the corporate sector, the civil society, and the research organizations. Mr Narang

said that the objective of CoRE is to provide an independent and credible platform for addressing the dual corporate objectives of environmental and economic excellence, thereby facilitating the movement towards sustainable growth of the Indian industry. He also said that CoRE should be used as a channel of communication to establish links between national and international organizations and to develop a joint programme where sector and company specific, besides generic problems of the entire industry can be worked out together. He also mentioned the new award TERI is planning to institute for environmental responsibility in corporates. Suggestions on how the CoRE members should work forward to a green movement were also invited.

Session I

Green profits: corporate perspectives and experiences

Chairperson Mr Ajay Narayanan, Vice President, IDFC (Infrastructure Development Finance Corporation Ltd), Chennai

Speakers Dr Arun Viswanath, Associate Director, P &G (Procter & Gamble India Ltd), Mumbai
Mr Ajay Narayanan, Vice President, IDFC, Chennai
Dr B R Tyagi, Deputy General Manager, IOC (Indian Oil Corporation), Faridabad

Dr Arun Viswanath

Dr Arun Viswanath made a presentation on the value and ethics of P&G India, in response to sustainability and the company's effort to redefine corporate goals of sustainability. He said that sustainability is a challenge and an opportunity for both the bottom as well as the top line growth of the industry. The three main factors in P&G India in this regard are social, environmental, and business sustainability. It considers them essential to business strategy. He gave a brief history and evolution of sustainability and what it meant in corporate terms. He then highlighted the efforts and products launched by P&G that were aimed to address its environmental and sustainability concerns. P&G India is working in the area of population, urbanization, disease control, women's health, water purification, and conservation. To promote sustainability in business, Dr Viswanath said corporates should find opportunities to address the issue and develop shareholder value to make it sustainable.

Mr Ajay Narayanan

Mr Ajay Narayanan highlighted the kinds of environmental problems that the corporate sector faces and the various opportunities available, especially from the environmental point of view. Profits in development are in terms of economic profits, risk anticipation, mitigation, and social market issues. He said that increased public awareness, and government laws and regulations are a result of global market drivers. In the corporate sector, managing these issues is a crucial factor. The best way would be to force other corporates to adopt green labeling, corporate social responsibility, and create linkages between environment and business. He highlighted the activities of the IDFC in terms of risk anticipation and mitigating, such that the IDFC anticipates problems before they occur and addresses the issue of industrial pollution and environmental protection. On the issue of financing, he said, that this could be done by linking it with existing multilateral funding agencies and also by leveraging it with international schemes. Such agencies are already funding various other sectors like climate change, carbon fund, GEF (Global Environment Facility) and others. So, to obtain funding for business environmental issues, the key factor would be to link local environmental issues with global issues.

Dr B R Tyagi

The speaker highlighted the increasing importance of road transport. Construction and maintenance of roads use bitumen as a binder and 98% of all roads are bituminous. Bitumen, being the last product in the petroleum industry, is a highly viscous material and has to be processed for its usage. There are 3 different ways of processing it. In the first process it is heated to high temperatures of 160°–170° to convert it to a liquid. The second process is by mixing it with a petroleum solvent and third method called the cold mix process is carried out by dispersing bitumen in water using an emulsifier. The first process of heating bitumen to high temperatures to make it workable is the most common procedure but it has a number of disadvantages, namely environmental pollution and the uneasy process methods, and working environment that are created while heating. A number of pollutants like carbon monoxide, oxides of nitrogen, nitrogen dioxide, hydrogen sulphide, carbon sulphide, mercaptains, aldehydes, phenols, ozone, methane, non-methane hydrocarbons, and volatile organics are released while heating. The hot mix also releases other compounds like benzene solubles, poly nuclear aromatics, nickel, vanadium, cadmium and lead. The other disadvantage of the hot mix process of treating bitumen is that the heating cannot be done in unfavourable weather conditions and hence, its

usage is restricted. However, many of these problems are solved if bitumen emulsion is used. Bitumen emulsion does not require the hot mix plant and hence the heating and release of many pollutants is reduced. It is also easy to handle and process in all seasons. The process of mixing bitumen in a petroleum solvent is rarely used. The cold mix process however is easy to handle and has become popular. This method of processing produces bitumen emulsion that has an extended life. Currently, bitumen emulsion consumption is about 30 000 tonnes while consumption of bitumen is about 2.5 million tonnes. India has the capacity to produce 150 000 tonnes of the bitumen emulsion every year. Dr Tyagi said that greater amounts of bitumen emulsion have to be produced in the country while awareness and education have to be inculcated to use it to full advantage.

Session II

Trade and environment: opportunities and threats

Speakers Mr Preet Malik, Ex-IFS, and Former Secretary to the Government of India, New Delhi
Dr T R Manoharan, TERI, New Delhi

Dr T R Manoharan

Dr T R Manoharan spoke on the conceptual issues of trade and environment that are relevant from the industry's point of view. It was highlighted that mutually supportive trade and environment policies are essential for achieving sustainable development. This is also being emphasized in the proceedings of Agenda 21,World Trade Organization and select multilateral environment agreements. He further elucidated the two facets of the linkage: the effect of environmental measures on trade, and the effect of trade on environmental quality. Each of the two has positive as well as negative effects on sustainable development. The positive effects of trade on environment are increased economic growth, hence increased investing capacity in environmentally sound technologies, increased environmental conservation methods, and also increased tolerance by local communities against crop rating and other negative effects from protected areas. The negatives include the issues of pollution and resource degradation. Some of the positive effects of environment on trade would include stricter norms and standards for environmental action, pollution control, and methods that would lead to sustainable development, it would create a comparative advantage for environmentally friendly products in the

global market, improve R& D activities and aid in the development of clean technologies. The negative aspects would include that environmental measures might be used as a protectionist measure to weaken liberal trade, might induce hindrances in terms of certification, labeling etc and stringent environment laws can also affect the market. Trends indicate that India's share in world trade has grown, especially in the post-reform period. Simultaneously, there are indications of increased growth of environmentally polluting industries in the developing countries. On the other hand, the share of these industries has declined in developed countries. These trends portend significant environmental implications as the economy grows and gets integrated with the world economy. It was suggested that the corporate sector would have to play a key role in conserving the natural resource base, enhancing R&D to develop environmentally friendly products and technologies besides building general awareness.

Mr Preet Malik

Referring to the negotiation process at a multilateral forum, such as the WTO, Mr Preet Malik said that although the approach adopted is based on consensus building, there has been a vast gap in the stance of the developed and developing countries. The developing countries have been pointing towards development and poverty reduction as their impending objectives. On the other hand, the developed countries want harmonization of standards across the globe, and freer trade to be an effective means to achieve this. The speaker stated that trade and environment are not mutually conflicting, provided trade and development incorporate positive measures such as transfer and exchange of environmentally sound practices that could ameliorate environmental side-effects. Moreover, standards may differ across countries, as these are a reflection of what is optimal or best for each country. As for the trans-boundary environmental issues, the countries may have to cooperate in a multilateral framework and the time frame of compliance should be defined. It is also important that the international community agrees to a time frame, that a developing country plans to adopt. International standards and norms are in place and have been drafted with adequate scientific and policy analysis support. He said that international trade measures like such as SPS (sanitary and phyto sanitary) and TBT (technical barriers to trade) standards, packaging requirements, etc. may well be legitimate, provided the consumers in developed countries become increasingly conscious of the environmental quality of products. These necessarily add to costs of production. Effective interaction between the industry and the

negotiators will help in evolving a stand that would be optimal from the nation's point of view. It is also important that the interaction is transparent and non-discriminatory and the technical and administrative constraints are overcome. The rules have to be evolved in a manner that these stimulate a process of change. Each country can no longer avoid being a part of international change and global realm of thinking. Poverty and economic development are important issues, but no developed country is willing to wait till the developing countries catch up with them.

A number of questions / comments were raised. While the industry should be concerned about conserving forests, is it not important that the vast tracts under wasteland are rehabilitated and provided forest cover? To this end, it was mentioned that JFM (joint forest management) programmes have done well. The second concern related to the presence of multiple process and product standards set in sugar industry and heavy subsidization system set in countries of sugar production. Subsidization leads to the situation of providing a negative situation to normal prevailing trade conditions. The situation hence demands producing the product to set standards and to improve production methods. The conversion to alternative processes is however expensive and affects market access. The response was that in future, the standards are only going to become tighter and there would be almost no escape from this. Better methods of production have to be sought, to satisfy international standards and to have market access. The other important points raised pertained to the need to evolve suitable standards at home rather than borrowing these from other countries, transparency in issues of enforcement and implementation, etc. For India to be heard in the multilateral forum, it is important that it be taken seriously, which will happen if it takes a logical and well-founded stance.

Session III

Eco-standards

Chairperson Mr K P Nyati, Head, Environment Management Division, Confederation of Indian Industries, New Delhi

Speakers Ms Monika Mahajan, Research Associate, TERI, New Delhi
Mr Ketan S Deshmukh, Lead Auditor LRQA (Lloyd's Register of Quality Assurance), Navi Mumbai
Mr S V Jamble, General Manager-Resource Conservation and Environment management, INDAL (Indian Aluminium Company Ltd), Belgaum

Ms Monika Mahajan

The speaker gave a presentation entitled *ISO 14001 and beyond*. She illustrated the construct for ISO 14001 and the basis of the procedure namely PDCA (plan, do, check, and act). The linkages of ISO 14001 with other eco-standards like benchmarking and labeling were also presented and she briefed on TERI's capability for Eco-rating, which is a framework to evaluate the environmental performance of Indian corporate sector.

She said that there are two tools, EMS (environmental management system) and EPE (environment performance evaluation) which can be used to measure the performance of any organization. Organizations can first perform EMS and then opt for EPE or vice versa. The Danish study on EPE found that performing EPE before going for EMS is more effective in improving environmental performance. Other environmental performance indicator initiative discussed is the CER (corporate environmental reporting), though in India it is at fairly a nascent stage and needs to be evolved. She discussed UNEP's (United Nations Environment Protection) five-stage model for CER and said that at present India is at the first stage and needs to move towards stage five. She also stressed on the need to see EMS, EPE, and CER in an integrated manner, linked to each other and not in isolation.

Mr Ketan Deshmukh

Mr Ketan Deshmukh's presentation was titled *environmental management system: core of ISO 14001*. He stated that the ISO 14001 concentrates on continual improvement and is structured on PDCA format. He discussed the various elements and clauses of ISO 14001 standard and explained how it achieves continual improvement. Continual improvement is achieved by using the PDCA cycle where we have to plan, implement, check, and act. The first step to the above process is by identifying significant aspects, after which the standard requires one to consider the legal aspect, the interested party, technology, finances, business concerns and other issues to determine the areas needing improvement. Thus, there is an objective that has to be controlled. The norms of operational control procedure are monitoring, measurement, training, and emergency preparedness and responses. Thus, the EMP basically forms a set of programmes where one would assign individuals different responsibilities. In a nutshell, every aspect of its nature affecting the environment is identified, and is worked on by setting objectives and targets. EMPs are then devised to implement these objectives and targets and operational control procedures are put in place to monitor and continually improve.

Mr S V Jamble

Mr S V Jamble's presentation was titled *Use of eco-standards*. He began by defining eco-standard and stressed on its voluntary nature and the need to go beyond legal requirements for organizations adopting these standards. 'Eco-standard is a set standard for improving the performance of a company's operations with the final objective of improving the environmental quality and the ecosystem'. So the main point of focus of the standard is on the operations and these could commence from marketing to the design, listing of products, and dispatching the product to the customer. The scope of setting this performance standard starts from the input of natural resources and covers all activities till the discharge of wastes. The other important feature of the standard is also the eco-enhancement of all activities. He stated that any organization could go in for implementing these standards when the need is felt for being socially and environmentally responsible. Mr Jamble then spoke on the methodology of development of eco-standards. These standards assure performance, reduce costs and improve profitability, improve confidence and image among stakeholders. Most importantly, they increase the supportive and assimilative capacity of the environment.

Comments by Mr K P Nyati

Mr K P Nyati compared the economic strength, environmental and social responsibility and stated that India ranks almost at the bottom compared to countries worldwide. He stressed on the need for the corporate sector to be more transparent, ensure more stakeholder participation, show more accountability, be environmentally and socially more responsible to adopt various eco-standards like EMS, EPE, and CER as integrated tools.

Session IV

Corporate social responsibility

Chairperson Mr S B Budhiraja, Senior Advisor, United Nations

Speakers Mr Rajesh Rawat, Reliance Industries Ltd, Mumbai
Mr Y K Saxena, Gujarat Ambuja Cement, New Delhi

Mr S B Budhiraja

Mr S B Budhiraja singled out the Tata group for their exemplary work on social and community development initiatives. However, leaving out a few examples, most business companies, he said, have little involvement in social development and environmental tasks.

Mr Rajesh Rawat

The speaker highlighted on the evolution of the concept of CSR (corporate social responsibility). It is a philosophy about the relationship between business and society. He said companies should use profits not only for rewarding investors but also contribute towards the well being of those communities in which they operate. Each company has its own unique way of responding to their own core competencies or the stakeholder's interest and by fulfilling these needs, can be socially responsible. He said corporates gain from CSR improved financial performances, greater commitment of employees, motivation, enhanced customer quality, loyalty, minimized risks, and reduced operating costs. He highlighted the efforts of Reliance Industries Ltd in the area of CSR. The company has been providing housing development and water supply in the drought stricken areas of Gujarat. He said worldwide there have been methods to develop strategies and methods to measure CSR in various fields of market, society and environment. Some of the performance indices for CSR are indicators structured around industrial relations, environment, safety, training and development, welfare, customers, and social initiatives.

Mr Y K Saxena

Mr Y K Saxena spoke on CEE (corporate environmental excellence) and the rationale behind it. He said that CEE is synonymous with environmental management. He shared experiences of his company Ambuja Cement. They began the process of turning their environmental critics into environmental customers. He highlighted on some of the company's programmes. They have started increasing public awareness about environment, increasing commitment brought forward innovative ideas. He highlighted on the various steps taken like: ISO 14001,voluntary environmental initiatives and Eco rating. The speaker said that his company reviews environmental policies and procedures, takes individual and collective environmental responsibility, has surveillance assessment, adopts greater environmentally sound processes and products, takes precautions against ailments and accidents, purchases green products, and has regular communication with the community.

Mr S B Budhiraja

GC (The Global Compact) essentially means shared values for the global market. It is an attempt to set up uniform values in the global sphere. GC is a network of United Nations, business communities, international labour and NGOs (non-governmental organizations). It is a platform to work together through cooperation. He briefed the audience on some of the declarations of the World Development Summit. He also said that GC encourages companies to embrace, support and protect core values in the light of human rights. Nine principles of human rights, labour, and environment were highlighted. Companies need to abide by these principles. It is a moral commitment by business leaders to express and support the GC.

Mr Budhiraja pointed out that in Mumbai, 20 reputed companies like the Tatas, the HDFC (Housing Development Finance Corporation) joined the GC last year. It has further been noted that joining GC would enhance the strength of the United Nations. Problems are not likely to disappear but concerted efforts need to be made to address these issues, which the speaker termed as 'aspirational moves'.

In the subsequent discussion sessions, the speaker said that GC's sphere of influence is to be on bigger companies, which would subsequently influence its suppliers, and vendors. Corporates, thus, could be enlightened citizens and could act as catalysts for better education, and development for humanity at large.

Session V

Presentation/ discussion on various topics of interest to CoRE members

Speakers Mr Pradeep Dadhich, Fellow, TERI, New Delhi
Mr Ashish Awasthi, Deputy Manager, M/S Triveni Engineering Works, New Delhi
Dr D K Tuli, Chief Research Manager, IOC, Faridabad
Ms Dhenuka Srinivasan, Research Associate, TERI, New Delhi

Mr Pradeep Dadhich

Mr Pradeep Dadhich gave a presentation on the barriers to implementation of cogeneration. He detailed the concept of cogeneration and also its benefits. Cogeneration being of very high-energy efficiency utilizes about 80% of the heat that is supplied from the fuel. It also uses reduced amounts of fuel and thus has

environmental benefits. There are also low transmission and distribution losses. The barriers to its implementation are the pricing of electricity or tariff rates set by the SERC (State Electricity Regulatory Commission) and the MNES (Ministry of Non-conventional Energy Sources) according the power policy. The other major barrier is the cost of interconnection as sugar mills generally are located far from the main distribution system.

Mr Ashish Awasthi

Mr Ashish Awasthi made a presentation entitled *Pollution from sugar mills and the remedial measures required.* The problems of a sugar mill are pollution of water, ground water and reduced water availability. He illustrated the complete process of sugar manufacturing and said that water pollution from sugarcane factories is the major problem. A number of methods of water conservation can be practiced. Sugarcane effluents can be used for irrigation and social forestry, as it contains no hazardous material. Air pollution from sugar factories is essentially from the burning of coal, which has been reduced by using bagasse as fuel. The flyash generated can also be reduced by the use of electro-static precipitators.

Dr D K Tuli

Dr D K Tuli gave a presentation of some work done at the IOC's R&D centre to produce products causing reduced environmental damage. He said that out of the total of one million tonnes of total lubricating oil, only 10% is being recycled. The textile industry has been introduced to IOC's biodegradable lubricants. Another ongoing project at the IOC is that of bio-desulphurization of diesel. Currently hydro-desulphurization is carried out to reduce the sulphur content, to get ultra low sulphur diesel. TERI has done pioneering work in this area to bring out the oil zapper that feeds on hydrocarbon, thus degrading the oil present in the sludge. The use of biological methods to degrade oily sludge has proved a viable option.

Ms Dhenuka Srinivasan

Ms Dhenuka Srinivasan made a presentation on the ongoing study at TERI as part of the CoRE activities that pertains to the analysis of policy statements. The initial material or data for the study was obtained from the *TERI- Business Today* survey, which was conducted by TERI. The survey was on Environmental Practices in the Indian industry. A questionnaire was mailed to around 450 companies. The response was received from only 10%, of which some of them

also sent in their company's environmental statement. The analysis was carried out at the level of mission statement and independent policy. The speaker highlighted the important statistics that appeared from the study and also invited participants to send in their policy statement for further study.

Concluding session discussion

The five concept notes on various topics of interest to the CoRE members were prepared and distributed. Prior to the conference, feedback was obtained from the CoRE members on the concept notes. One of the suggestion was to devise a format for collection of information on hazardous waste and work further on this topic. Members were also requested to adopt each of these concept notes as independent projects that could be field tested in a company. Other topics of interest were on the issue of burning of sludge from blast furnaces, greening of mining areas and reclamation of mine sites. It was stated that CoRE should function as a roundtable, and the members should debate issues in a working group. Lecture series could be organized where by a CoRE member gets feedback from other members. Mr R K Narang announced that the next roundtable would be in August 2001.

Highlights

The workshop was well-received and about 56 participants from both CoRE member companies as well as external corporates attended. The CoRE member companies represented at the conference included IOC (Indian Oil Corporation Ltd.), Reliance Industries, Gujarat Ambuja Cement Ltd., Ashok Leyland, Shree Cement Limited, Tata Chemicals, BHEL (Bharat Heavy Electricals Ltd.), Chennai Petroleum Corporation Ltd. and ICI India Ltd. Representatives from other leading companies/organizations such as Hindustan Petroleum Corporation Limited, Numaligarh Refinery Limited, Bharat Petroleum Corporation Limited, SAIL (Steel Authority of India Ltd.), Cement Manufacturer's Association, ITC Hotels Limited, Indian Farmers Fertilizer Cooperative Limited, The Fertilizer Association of India, Gas Authority of India Ltd., Procter and Gamble India, IDFC (Infrastructure Development Finance Company Limited), CII (Confederation of Indian Industries), INDAL (Indian Aluminium Company Limited), LRQA (Lloyds Register of Quality Assurance), etc were present. Among these, there were totally 18 speakers. The various sessions dealt with a wide-range of issues regarding corporate strategies and sustainable development. The session on *Green profits: corporate perspectives and experiences* highlighted some of the practices in the field by leading

companies like the P&G and the IDFC. The session *Trade and environment* lucidly dealt with the implications of the links between trade and environment. *Eco standards* dealt with a whole array of issues concerning eco-standards, ISO 14000, indicators and benchmarking. The session *corporate social responsibility* talked about the emerging trends in this area, corporate transparency, and reporting on environmental and social performance. The concluding session dealt with issues of cogeneration: its barriers to implementation, pollution from sugar mills and remedial measures. The session also included a presentation on biotechnological applications to reduce pollution and on the analysis of environmental policy statements. The concluding session was interactive in nature and highlighted the present activities of CoRE with particular reference to the concept notes developed by TERI. The workshop ended with a summary of the day's proceedings by Mr R K Narang. All the new CoRE members were duly felicitated. Dr T S Panwar in his capacity as the CoRE coordinator thanked and acknowledged all the speakers, and participants of the conference for making it a success.

Co.R.E.
Corporate Roundtable on development of strategies for the Environment

CoRE - Leading the way...

- A **network of leading companies,** promoted by TERI, aimed at defining the sustainability agenda for industry.
- An endeavour by the corporate sector **to go beyond compliance,** and to act as an agent of change.
- A **partnership** between the corporate sector & civil society

Mission

To provide an independent and credible platform for addressing the dual corporate objectives of environmental and economic excellence, and thereby facilitate the move towards sustainable growth of {Indian} industry.

Goals...

1. Bringing together CoRE resources & TERI's research capabilities to -
   - gain a better understanding of sustainability concerns facing industry;
   - develop and disseminate strategies and decision-making tools;
   - create awareness of best practices (domestic & international).

Contd...

2. To display corporate initiative & responsibility.
3. To use CoRE as a channel for communicating with stakeholders & developing joint strategies.
4. Establish links with other national and international organisations to develop & implement joint work programs.

Themes...

I. Resource efficiency & Ecology
II. Management systems and strategy
III. Stakeholder collaboration / interaction

Generic | Sector/ Company-specific

What makes CoRE unique?

- Focus on sustainable development
- Absence of ideological/ political agenda
- Industry involvement in setting the agenda & guiding work undertaken
- Committed professional back up for research work
- Corporate partnership with civil society

1st such initiative by Indian industry.....!

CoRE website

- About CoRE (background/activities/membership)
- Member profiles
- Information resources
  - case studies/ profiling 'success stories'
  - papers and articles
  - CoRE clips/ENCoRE
  - Legal developments
  - links
  - presentations
- Query facility

CoRE outreach

News clippings: **"CoRE Clips"** (Weekly; Electronic) latest news on industrial sustainability : free to CoRE members, non-members annual subscription Rs 7000

Newsletter: **"ENCoRE - Emerging News on CoRE"**

- 3 issues per annum
- Editorial board:
  - Dr R K Pachauri (Director General, TERI)
  - Mr R K Narang (Distinguished Fellow, TERI)
  - Mr Somnath Bhattacharjee, (Director, EET Div., TERI)
  - Dr A L Aggarwal (Senior Fellow, TERI)
  - Mr Marcel Engel (Manager, WBCSD Global Network)

Suggested Award

- An award for Environmental Responsibility would be offered to CoRE members annually
- Momentum for Green Movement

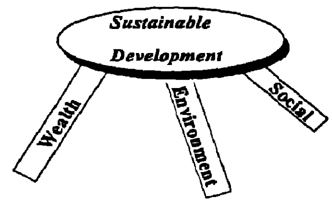
Redefining the Sustainable Enterprise

Arun Viswanath

Procter & Gamble

Sustainability….

The Synergy Between Economic Development, Social Equity and the Environment.



Sustainability….

"Sustainable development is a very simple idea. It is about ensuring a better quality of life for everyone, now and for generations to come."

From "Opportunities for Change",a consultation paper on a revised UK strategy for Sustainable Development, UK, Feb 1998

Project Drishti

- 1999 - Year of the Adolescent Girlchild
- To restore sight of 250 adolescent girls thru corneal transplant
- Partner - National Assn for the Blind(NAB)
- 1 rupee contribution from sale of Whisper pack

Open Minds
Getting working children into schools

- Partnership with UNICEF
- P&G contribution - 1 day education cost from sale of every large pack of Ariel, Whisper, Pantene, H&S
- Rs. 1 crore raised
- Benefitted 20,000 children

Project Poshan

- P&G contributes Rs. 1 for every large pack Ariel, Whisper, Pantene, H&S SOLD
- Rs. 50 Lakhs committed
- Supporting UNICEF projects in Mumbai, Jaipur, Chennai

Dow Jones Sustainability Group Index
Corporate Sustainability Leaders

Consumer Non-durables	**P&G**
Consumer Durable	BWM
Energy	BG Group
Healthcare	Bristol-Myers Squibb
Financial	Credit-Suisse
Telecom	Deutsche Telekom
Basic Mtl	Dofasco
Technology	Fujitsu
Industrial	Sulzer
Utilities	Thames Water

Conclusions

- Social Dimension - Important Business needs to be proactive
- Build Shareholder Value as we build Societal Value
- Bottom Line & Top Line Growth
- "HOW" versus "WHAT"
- Not business as usual
- We have NOT figured Sustainability Out YET

A perspective on managing and financing the environment

Ajay Narayanan
Vice President
Environment Management Group
Decentralized Infrastructure & New Technologies Group

Profits in Development

- Economic
  - By increasing incomes/revenues
  - By reducing expenses/outflows
- Risk anticipation and mitigation
  - Insurable risks
  - Environment and social risks
- Social/Market
  - Competitive pressures
  - Consumer preference

Environment risks in Projects

- Environmental Risks
  - Pollution
  - Resource utilization
- Social Impacts
  - Land acquisition & Loss of livelihood

Drivers for Environment

- Regulation
- Public pressure
- Involvement of the judiciary
- Financial Institutions & Insurers
- International treaties and agreements
- Business/Commercial drivers

Global/Market drivers

- Global sensitivity to Environment
  - Green labeling (consumer preference)
  - Corporate social responsibility and reporting
  - Environment as a competitive advantage
- Non-tariff barriers
  - Environmental standards
  - Supply chain requirements
  - Labour standards

IDFC's perspective

- Status
  - Infrastructure : major E&S impacts
  - E&S impacts from liberalization need to be addressed
  - All impacts need to be evaluated and addressed
  - Many E&S issues relate to poor policy framework and gaps
- Project review and conditions for project addressable risks
- Broader initiatives to address medium and long term policy issues

IDFC's Approach

- Scope : Environment, Health, Safety and Social issues
- Criteria
  - Indian legislation/regulations
  - International best practices
- Integral/Independent part of project appraisal
  - Screening & Review
- On-going monitoring
- Project activities & Policy initiatives

IDFC's options

- Mitigation of environment and social risk
- An independent environment due diligence at project appraisal time
- Follow up during life of project
- Hopefully be able to anticipate problem areas before they occur and
  - Either rectify/mitigate
  - Or exit

Requirements in Environment

- Industrial Pollution Control
  - Clean Technologies/approaches
- Environment Infrastructure
  - Common facilities
    - Hazardous waste
    - Biomedical waste
    - CETP
  - Municipal Solid waste
- Restoration of resources

Financing for environment

- International sources
  - Climate change & global concerns
    - Carbon Funds
    - GEF
    - Others
  - Transfer of technology/expertise
    - Bilateral/Multilateral schemes
- Domestic measures
  - Tax concessions
  - Subsidies for renewable energy
  - Land grant/support for common facilities

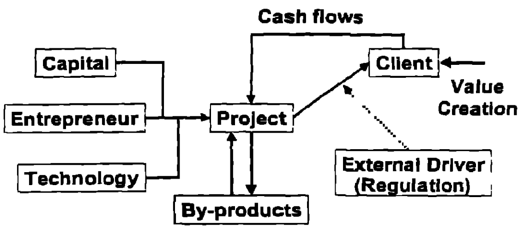
Profits from Environment

- Environmental projects
  - Common facilities (on commercial terms)
- Efficient resource utilization
- Leveraging domestic schemes
  - Renewables
  - Waste to energy
- Leveraging international schemes
  - Energy efficiency
  - Renewables
  - Schemes linked to technology transfer
  - Green funds

Environment Infrastructure

- Hazardous Waste TSDF's
- Municipal Solid waste facilities
- Effluent treatment plants
- Biomedical waste TSDFs
- Others
  - Water supply & sanitation
  - Energy efficiency and DSM
  - Renewable energy
  - ODS projects
  - GHG mitigation projects
- Remediation & Clean-up

Project viability framework



Commercial Viability is critical to enable financing

Value creation model

- MSW to Energy projects
- The client is really the Municipality/Waste generator
- No direct economic advantage to client
- Avoided cost of TS&D
- We are not yet ready to cost externalities
- Cash flows based on value creation can sustain project
  - Recyclables
  - Compost
  - Energy

Summary

- Environment risks are playing a key role in success of projects
- Financing/profits related to Environment requires
  - Commercial viability (or)
  - Meets some other objective
    - Transfer of technology/expertise
    - Global environment problems
    - Consumer/shareholder perspective

Thank you

INDIAN OIL CORPORATION LIMITED
R&D CENTRE, SECTOR - 13
FARIDABAD - 121007

BITUMEN EMULSION - ECOFRIENDLY BINDER

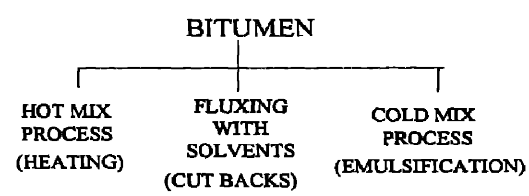
B.R.TYAGI
DY. GENERAL MANAGER

ROAD TRANSPORT

- RAILWAYS & ROADS PLAYED CRUCIAL ROLE IN SURFACE TRANSPORT
- SHARE OF ROAD TRANSPORT GRADUALLY INCREASING
- FREIGHT TRAFFIC SHARE GONE UP FROM 11% IN 1951 TO 60% IN 1998
- PASSENGER TRAFFIC GONE UP FROM 26% TO 80% IN THE SAME PERIOD
- ADVANTAGES WITH ROADS TRANSPORT
  - FLEXIBILITY OF OPERATIONS
  - DOOR-TO-DOOR DELIVERY
  - RELIABILITY
  - VARIABILITY IN TRANSIT TIME/SPEED
  - LESS STRINGENT PACKING CONDITIONS
- EXPANSION IN ROAD NETWORK FROM 400,000 KM IN 1951 TO 3,300,000 KM IN 1998

ROAD NETWORK IN INDIA

	ROAD CATEGORY	LENGTH (km)
A.	INTER-URBAN ROADS	
	• NATIONAL HIGHWAYS	49,500
	• STATE HIGHWAYS	125,500
	• MAJOR DISTRICT ROADS	275,000
		450,000
B.	RURAL ROADS	
	• OTHER DISTRICT ROADS AND VILLAGE ROADS	1,500,000
	• JRY (JAWAHAR ROZGAR YOJANA) ROADS	920,000
C.	URBAN ROADS	200,000
D.	PROJECT ROADS	230,000
	TOTAL	3,300,000



HOT MIX PROCESS - DISADVANTAGES

- **HAZARDOUS NATURE**
  - HANDLING OF HOT BITUMEN/ AGGREGATES
  - HOT APPLICATION
- **ENVIRONMENTAL POLLUTION**
  - BURNING OF COSTLY FUEL/ FIREWOOD
  - HYDROCARBON EMISSIONS
  - DUST EMISSION

COMPOSITION OF ASPHALT HOT-MIX EMISSIONS

- Non-Visible Components (ppm)

– Carbon monoxide	3-4
– Nitrogendioxide(NO_2)	.05-0.08
– Sulfur dioxide (SO_2)	<0.5
– Hydrogen sulfide(H_2S)	<0.2
– Carbonyl sulfide (COS)	<0.2
– Mercaptan (RSH)	<0.2
– Aldehydes (RCHO)	0.3-0.4
– Phenol (PhOH)	<1
– Ozone (O_3)	<0.1
– Methane (CH_4)	2-3
– Non-methane Hydrocarbons(C_1-C_4)(NMH)	<1
– Volatile organic compounds(C_7-C_{14}) (VOC)	0.5-1.0

COMPOSITION OF ASPHALT HOT-MIX EMISSIONS

- **Particulates (mg/m^3)**

– Total particulates	0.5-5.7
– Benzene solubles	0.2-5.4
– Polynuclear aromatics (total), max.	0.00016
– Nickel (Ni), max.	0.00004
– Vanadium (V), max.	<0.0001
– Cadmium (Cd)	<0.00005
– Lead (Pb)	<0.00005

POLYNUCLEAR AROMATIC COMPOUNDS IN PARTICULATES

COMPOUND : µg/1000m^3	Range
Pyrene	44-240
Benz(a)anthracene	5-24
Benzo(a)pyrene	3-20
Benzo(e)pyrene	14-40
Perylene	5-16

Ref: Report on Emissions from Asphalt hot mixers, Asphalt Institute, Asphalt Institute Publications Report no.75-1A

HOTMIX PROCESS - DISADVANTAGES (CONT.)

- LIMITED WORKING PERIODS
- WASTAGE OF MATERIAL
- LOSS OF ADHESION DUE TO OVER HEATING

BITUMEN EMULSION

- FINE DISPERSION OF BITUMEN PARTICLES IN WATER WITH THE HELP OF SUITABLE EMULSIFIERS
- OIL IN WATER TYPE, HETEROGENOUS SYSTEM
- FLOWABLE AT AMBIENT TEMPERATURE
- CHOCOLATE TO BROWN IN COLOR
- PARTICLE SIZE = 1 TO 10 MICRON.
- COLLOIDAL MILL (ROTOR STATOR TYPE) REQUIRED FOR PRODUCTION OF BITUMEN EMULSION
- BINDER CONTENT 30-70%

ADVANTAGES

ENERGY SAVING

- ENVIRONMENT FRIENDLY
- SAFE HANDLING
- NO FEAR OF RAIN/COLD WEATHER
- EXTENDED WORKING PERIOD
- HIGH PRODUCTIVITY
- EXTENDED PAVEMENT LIFE DUE TO :
  - ANTI STRIPPING PROPERTIES
  - NO HEATING - ADHESIVE PROPERTIES INTACT
- NO COMPLICATED MACHINERY FOR PAVEMENT CONSTRUCTION
- ECONOMIC

SAFETY

- SAFE MATERIAL DUE TO PRESENCE OF WATER
- NORMALLY USED AT AMBIENT TEMPERATURE
- NO DANGER OF BURNING/FIRE
- SAFE FROM A POLLUTION OR TOXICITY POINT OF VIEW

CONSUMPTION OF BITUMEN EMULSION/BITUMEN

COUNTRY	ANNUAL TONNAGE BIT EMULSION	BITUMEN	%
USA	3,166,000	26,000,000	12 2
FRANCE	1,200,000	2,800,000	43.0
SPAIN	440,000	1,600,000	27 5
GERMANY	168,000	2,780,000	6.0
JAPAN	334,996	4,418,000	7 6
SWEDEN	69,000	492,000	14 0
AUSTRALIA	80,000	607,000	13 0
AUSTRIA	21,000	386,000	5 4
BRAZIL	420,000	1,330,000	31 6
SOUTH AFRICA	120,000	300,000	40 0
MEXICO	45,000	266,360	16 9
SOUDI ARABIA	12,000	89,000	13 5
TURKEY	20,000	600,000	3 3
RUMANIA	30,000	200,000	15 0
INDIA	30,000	2,500,000	1 2

INDIA HAS THE PRODUCTION CAPACITY OF 1,50,000MTPA

APPLICATION

- SURFACE DRESSING
  - SINGLE COAT
  - TWO COAT
- COLD MIXES
  - OPEN GRADED
  - SEMIDENSE
  - DENSE
- PATCHING MIXES
- SLURRY SEAL
- RECYCLING
- PENETRATION MACADAM
- TACK COAT
- PRIME COAT
- FOG SEAL
- CRACK FILLER
- DUST BINDING

IOC R&D WORK

- FORMULATION DEVELOPMENT
  - IMPORTED/INDIGENOUS EMULSIFIERS
  - THREE GRADES (RS, MS, SS)
  - MEET IS/ASTM/OTHER SPECS
  - SHELF LIFE MORE THAN TWO YEARS
  - EXCELLENT QUALITY
- PRODUCT LAUNCHED IN JULY' 94
- BRAND NAME
  - INDEMUL-R
  - INDEMUL-M
  - INDEMUL-S

FIELD TRIALS

- JOINT STUDY BY
  - IOC R&D, CRRI, DGBR
- LOCATION
  - NH-1A (J&K) JULY'92
  - NH-44 (ASSAM) MARCH'93
  - H-S ROAD (RAJ.) FEB.'95
- SURFACE SPECIFICATION
  - 2 CM THICK PREMIX CARPET
  - SEMI DENSE ASPHALTIC CONCRETE
- TEST SECTION
  - 100 X 7 M^2 BITUMEN & BITUMEN EMULSIONS SECTIONS
  - FIELD TRIALS HAVE BEEN COMPLETED
  - JOINT REPORT WILL BE ISSUED TO CUSTOMERS, MOST AND ALL CONCERNED.

PERFORMANCE EVALUATION AT HRS

- BINDER CONSERVATION
  - SPECIFIED QUANTITY
  - 10% LESS BINDER
  - 15% LESS BINDER
  - 20% LESS BINDER
- SPECIFICATION
  - IRC : 14-1997
  - IRC : 97-1987
- TEST TRACK

ID	1.83 M	OD	3.43 M
WIDTH	0.60 M	LENGTH	13.51 M

AREA OF PAVEMENT : 8.1 M^2

TYRE SIZE : 7.00 X 20

TYRE PRESSURE : 4 KG/CM^2

LOAD ON WHEEL : 0.5 TO 1.0 MT

- PAVEMENT CONDITION : DRY/WET
- BEST PERFORMANCE WITH 10% LESS EMULSION

RATIONALISATION OF BINDER QUANTITY IN BITUMINOUS ROAD SURFACINGS

- FIELD TRIAL ON NH-2 (KM 228.000 - 230 000) AGRA
- JOINT TRIAL
  - CRRI, UP PWD, IOC R&D
- SPECIFICATION
  - TWO COAT SURFACE DRESSING IRC : 96-1987
  - 2 cm THICK PREMIX CARPET IRC: 97-1987
  - MIX SEAL SURFACING, MOST Section 500, Clause 510;
- QUANTITY OF INDEMUL
  - STANDARD
  - 5% LESS
  - 10% LESS
  - 15% LESS
  - 20% LESS
  - REFERENCE
- PERIOD; MAY- JUNE 1998

MANUFACTURERS OF BITUMEN EMULSION IN INDIA

- INDIAN OIL CORP. LTD. 2 PLANTS HR & PR.
- HINDUSTAN COLAS LTD.
- HINDUSTAN PETROCHEMICALS LTD., PALWAL.
- ABC CALCUTTA.
- SM BITUMAX LTD. PUNE AND MOBILE BITUMEN EMULSION PLANT AT DELHI.
- M/S JALNIDHI, CALCUTTA - TRADE NAME HI-FIX.
- OTHERS

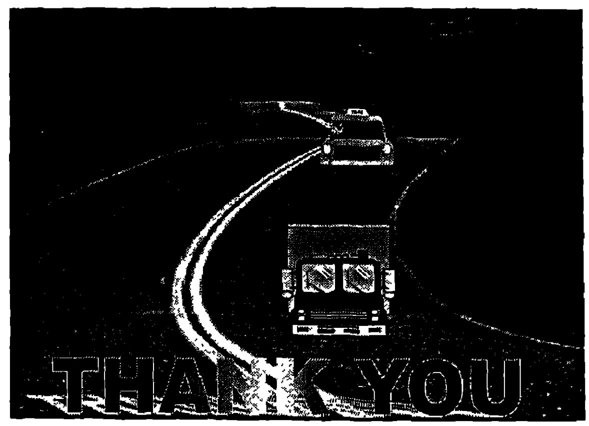
MOST DIRECTIVE

- ALL REPAIR WORKS INCLUDING POT HOLES FILLING, PATCHING AND SURFACING IN SHORT STRETCHES REQUIRED ON BITUMINIOUS SURFACINGS DURING WET SEASONS MUST INVARIABLY BE CARRIED OUT WITH BITUMEN EMULSIONS
- NO SUCH WORK SHOULD BE PERMITTED WITH STRAIGHT RUN BITUMEN
- *IT SHOULD* ALSO BE ADOPTED FOR PREVENTIVE SURFACE TREATMENT (20 MM RENEWAL COAT OR SIMPLY SEAL COAT) CARRIED OUT IN THE IMMEDIATE PREMONSOON SEASON IN ORDER TO SAVE FUEL AND ACHIEVE A WATER RESISTANT ANTI-STRIPPING ROAD AS SURFACE

(REF. NO. RN/NH-33045/1/90-BR dt 4/6/1992)

CONCLUSIONS

- FOLLOWING CONCLUSIONS CAN BE DRAWN ABOUT THE BITUMEN EMULSION
  - IT IS ENVIRONMENT FRIENDLY HAVING MANY INHERENT ADVANTAGES
  - QUALITY PRODUCT IS AVAILABLE IN THE COUNTRY
  - COUNTRY HAS ENOUGH PRODUCTION CAPACITY
  - PERFORMANCE OF BITUMEN EMULSION IS COMPARABLE/BETTER THAN NEAT BITUMEN
  - CUSTOMER EDUCATION BY WAY OF TRANING, SEMINAR, DEMONSTRATION IS HIGHLY DESIRABLE
  - NEED TO DEVELOP A PROPER MIXER
  - IT IS HIGH TIME THAT GOVT. OF INDIA SHOULD STRONGLY EMPHASISE USE OF THIS ECOFRIENDLY BINDER.



The role of corporate sector in reconciling

trade and environment issues in India

Dr T R Manoharan
TERI

Positive and Negative Effects

- **Impact of trade on environment**
- **Impact of environment on trade**

- *Mutually supportive trade and environment policies are essential for achieving sustainable development*
- *The relevant provisions of:*
  - *"Agenda 21"*
  - *WTO*
  - *Select MEAs*

Effects of environmental measures on trade

Positive

- Appropriate environmental standards and other measures will support the effort to achieve sustainable development
- Products having higher environmental standards normally have a comparative advantage in the market over other products
- The global market for environmentally friendly products is increasing at a faster rate. It is also possible to invest a portion of benefits on research and development of clean technologies

Negative

- Environmental standards can be used as protectionist measure which will weaken the principles of liberal trade
- Stringent environmental standards can adversely affect the market access of others having relatively low environmental standards
- Relocation of industries into pollution havens

Effects of trade on environment

Positive

- The capacity to address environmental conservation will increase due to the increased economic growth
- The capacity in investigating environmentally sound technologies will increase
- Increased tolerance by local communities against crop raiding and other negative effects from Protected Areas
- More allocation of funds for developing necessary infrastructure facilities and R&D activities to address environmental issues

Negative

- Air Pollution and water pollution as a result of increased polluting industries and economic activities (Result. effect on human health, contamination of resources)
- Degradation of land and depletion of natural resources (Deforestation, Soil erosion, biodiversity loss, extinction of keystone species, global warming)

Major Issues

Global level

- Market access problems due to increased product based environmental standards other measures in developed countries
- Relocation of dirty industries

National level

- Increased Pollution levels (air, water and land)
- Lack of awareness on the environmental performance of the product/service (in the local markets)

How to define Environmentally Sensitive products/sectors in trade?

- Based on pollution control and related expenditures
- based on environmental effects of the product during its consumption or disposal
- based on the effects of the product on large scale conversions

Eco-labelling: Does it help ?

- Most eco-labelling schemes are voluntary
- Eco-labelling in India is said to be a failure
- Eco-labelling in Developed countries are popular but its implications are to be analysed

- Products and Production Process and Methods
- How eco-labelling capture markets?

Suggestions

- Corporate sector has a major role to play in conserving natural resources including forests and biodiversity in attaining long term benefits
- Should Increase R&D to develop environmentally friendly products/PPMs
- should make attempt to sensitize domestic industry and consumers on the changes in environmental standards and regulations

Corporate Strategies for Sustainable Development

"Use of Eco-standards"

By
S. V. Jamble
Chief General Manager- Environment

Indian Aluminium Company, Limited

What is Eco-standard?

- It is the standard of performance set for achieving improvements in environmental quality and eco-system
- Scope - Input of natural resources
  - Discharge of wastes
  - Other eco-enhancement activities
- Voluntary initiative
- Often set beyond legal standards

Why Eco-standards?

- Assures performance beyond legal requirements at all times.
- Often reduces costs and improves profitability.
- Increases supportive and assimilative capacity of environment.
- Provides opportunity for future development and growth.
- Improves confidence and image among the stakeholders about the environmentally responsible behavior.
- Helps in making business sustainable.

Who and when to have Eco-standards?

Who?

- Any organization whose activities, products and services can have an impact on the environment.

When?

- Environmental impacts are perceived even after achieving legal compliance.
- Need arises to reduce strain on natural resources like water, land, forest produce etc. so that business continues to grow
- Need is perceived to demonstrate the environmentally responsible behavior to the stake holders.

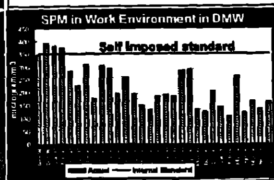
How to develop Eco-standards?

- Identify key environmental issues for development of eco-standards
- Evaluate the need in relation to business, social and environmental requirements.
- Evaluate the techno-economic feasibility of design and / or process changes.
- Evolve new sets of operational controls to enable achievement of eco-standards. *(Use of ISO 14031 is recommended)*
- Implement, if above is environmentally beneficial and techno economically feasible

Case studies from INDAL

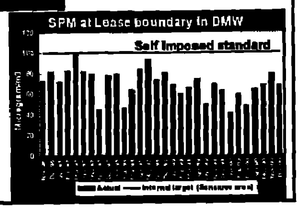
- Air Environment
- Water Environment
- Land Environment

Air Environment - Mines

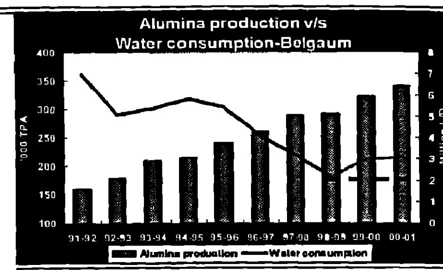


Issue
- Dusty operations

Legal Standards
- Work Area - 10mg/m3
- NAAQ - Nil

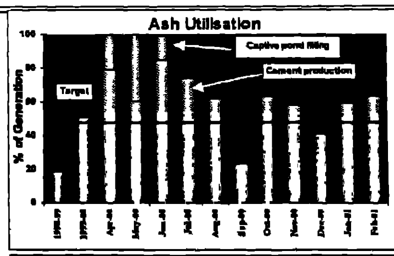


Water Environment



- 200% increase in production in a decade
- 50% reduction in fresh water consumption
- Net decrease in specific water – 75% (1991- 92 base)
- '0' discharge of effluents
- Programs to reduce further by 25% (2000-2001 base)

Land Environment



- Dry ash collection, storage and supply
- 90% Fly ash
- Quality to suit cement producers
- Terraced storage to reduce land requirement
- Luxuriant green cover on abandoned storages

Thank You

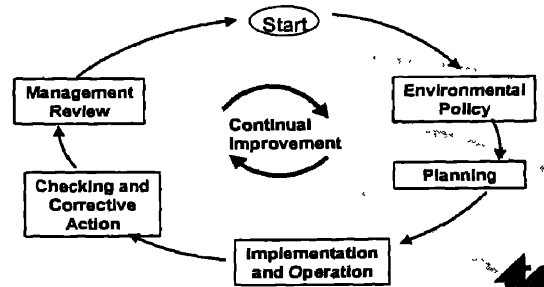
For

Your Kind Attention

ISO 14001 and beyond ...

By
Monika S Mahajan
TERI

EMS Elements According to ISO 14001



How To ?

- HOW TO ASCERTAIN continual improvement in *environmental performance*?
- HOW EFFECTIVE is the EMS in generating continual improvement in *environmental performance*?
- HOW TO EVALUATE *environmental performance*?

Environmental Performance Evaluation (EPE)

- A tool intended for use on an ongoing basis *to assess current environmental performance and trends over time*,
- Can be used by organisations having an EMS and by those not having it,
- Applies to organisations regardless of their size, type, location and complexity.

ISO 14031

Selection and use of indicators to determine environmental performance

- Environmental condition indicators
- Environmental performance indicators
  - Operational performance indicators
  - Management performance indicators

TERI's Eco-Rating System

- Framework to provide an evaluation of corporate environmental performance considering
  - Pollution impacts
  - Resource intensity
  - Work environment
  - Contingency management systems
  - Environmental management systems

EMS and EPE:
A Combined Approach

- ISO 14001 requires an organisation to monitor and measure the environmental performance of it's activities, products and services in order to continually improve such performance, and
- ISO 14031 provides guidance for this purpose

(From: *ISO 14000 - meet the whole family, ISO 1998*)

EMS and EPE:
A Combined Approach

- Establish an EMS
- Measure environmental performance
- Use environmental performance information
  - to produce trends
  - to set targets
  - to monitor progress towards these targets
  - compare performance across facilities / benchmarks

Danish EPA Study

ISO 14031 (EPE) can be used as a tool for

- elaborating the requirements of ISO 14001 i.e. Env aspects; objectives, targets and programmes; monitoring, measurement and operational control; and management review
- generating information on performance trends
- documentation for legal requirements
- environmental reporting.

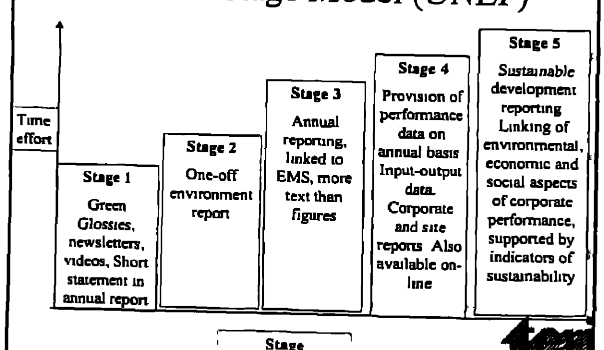
Voluntary Environmental Reporting

- Preparation & provision of information, by management, for the use of multiple stakeholder groups, on the environmental status and performance of their company or organization
- No. of companies reporting and sectoral coverage
- Stand-alone CER v.s. section in annual report
- Environmental to env & social to sustainability reporting

Situation of reporting in India

- Currently at a miniscule level
- The 'reports' look like *'green glossies'* or colourful newsletters/brochures
- The intention primarily is to portray the *"good to the environment & society"* done by the company
- Data collection & analysis, fear of non-compliance and cost are seen as major impediments to reporting.

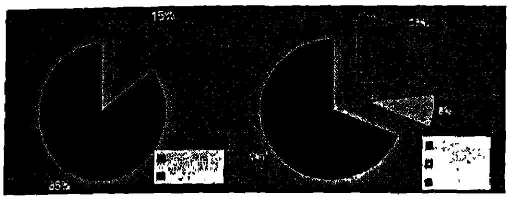
The Five-Stage Model (UNEP)



Does EPE facilitate CER?

An important weakness in current reports is the lack of comparable data.

There is scope for meaningful environmental performance indicators.



From: Coming Clean·Opening up for sustainable Development, IISD, Canada, 1993

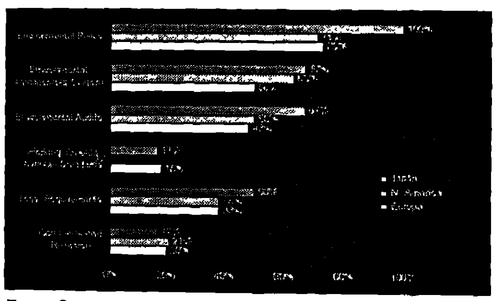
Environmental Performance Evaluation and Reporting

Report on the results of environmental performance evaluation to appropriate stakeholders.



Increased environmental disclosure is a means of improving environmental performance.

Does EMS facilitate CER?



From: Coming Clean. Opening up for sustainable Development, IISD, Canada, 1993

From EMS and EPE to CER

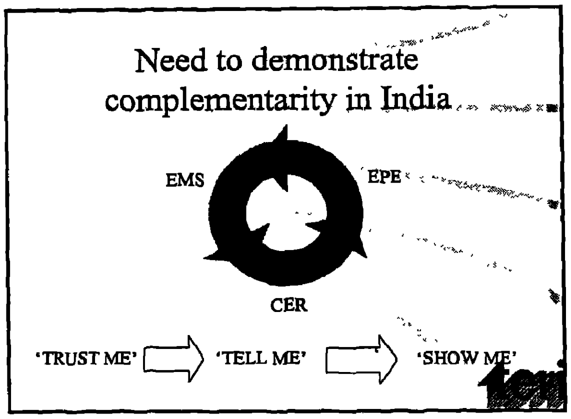
- A lot of raw data is collected in the process of designing and implementing an EMS and while doing an EPE.
- For CER, the company needs to convert this raw data into
  - information that is useful, meaningful and relevant
  - by providing structure, format, context, and tools for data presentation and calculation.

Lessons to be drawn

- Baxter International
  - Evolutionary nature of EPER
  - Need for data integrity
  - Value of management performance indicators
  - Complementarity of performance evaluation & reporting
  - Need to relate environmental action to business objectives

Lessons to be drawn

- Japan
  - Certifications to ISO 14001by industries and non-commercial organisations has led to greater emphasis on EPE and information disclosure
- Malaysia
  - Integrated approach to EMS and EPE


Need to demonstrate
complementarity in India
EMS
EPE
CER
'TRUST ME'
'TELL ME'
'SHOW ME'

Lloyd's Register Quality Assurance

Environmental Management System
CORE of ISO 14001

Ketan Deshmukh

ISO 14001: 1996
Environmental Management System

- What is Environmental Management System?

The part of the overall management system that includes organizational structure, planning activities, responsibilities, practices, procedures, processes, and resources for developing, implementing, achieving, reviewing and maintaining the environmental policy

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ISO 14001: 1996
Environmental Management System

- What is ISO 14001?

An Environmental Management System that fulfills the requirements described in whole of Clause 4 of ISO 14001 : 1996

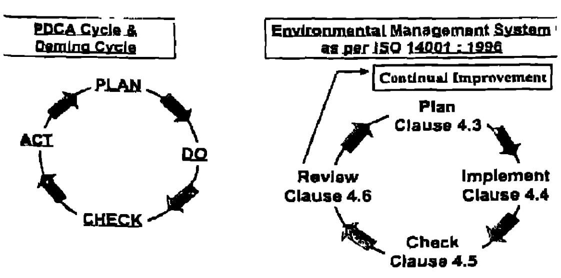
ISO 14001: 1996
Environmental Management System

- Environment

Surroundings in which an organization operates, including air, water, land natural resources, flora fauna, humans, and their inter-relation

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ISO 14001: 1996
Environmental Management System



ISO 14001: 1996
Environmental Management System

- Environmental Aspect

Element of an organizations activities product or services, that can interact with the environment

Keyword: Interact

Note: A significant environmental aspect is an environmental aspect that has or can have a significant environmental aspect

ISO 14001: 1996
Environmental Management System

☛ Environmental Impact

Any change to the environment adverse or beneficial, wholly or partially resulting from an organizations, activities, products or services

Keyword: Change

ISO 14001: 1996
Environmental Management System

☛ Environmental Target

Detailed performance requirement, quantified where practicable, applicable to the organization or parts thereof, that arises from the environmental objectives and that needs to be set and met in order to achieve those objectives

ISO 14001: 1996
Environmental Management System

☛ Planning

- Environmental Aspects
- Legal and other requirements
- Objectives and targets
- Environmental management programme(s)

ISO 14001: 1996
Environmental Management System

☛ Implementation and operation

- Structure and responsibility
- Training, awareness and competence
- Communication
- Environmental management system documentation
- Document control
- Operational control
- Emergency preparedness and response

ISO 14001: 1996
Environmental Management System

☛ Checking and corrective action

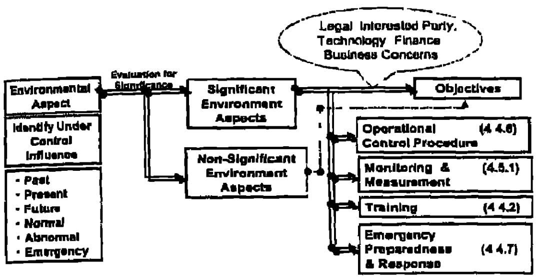
- Monitoring and measurement
- Nonconformance and corrective and preventive action
- Records
- Environmental management system audit

ISO 14001: 1996
Environmental Management System

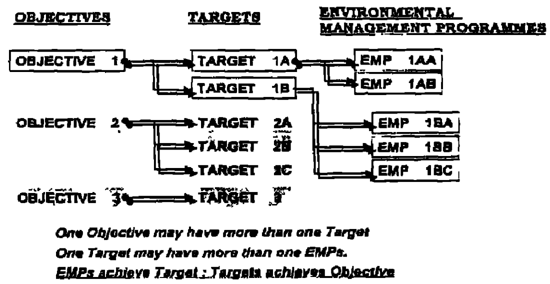
☛ Management review

Management review to achieve continual improvement

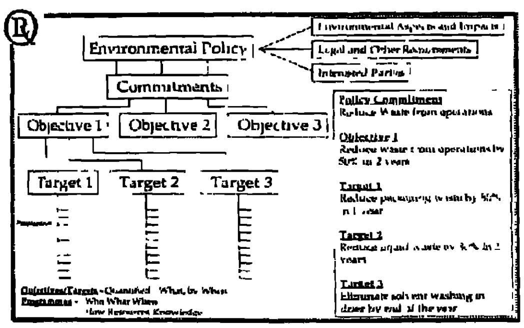
ISO 14001: 1996
Environmental Management System



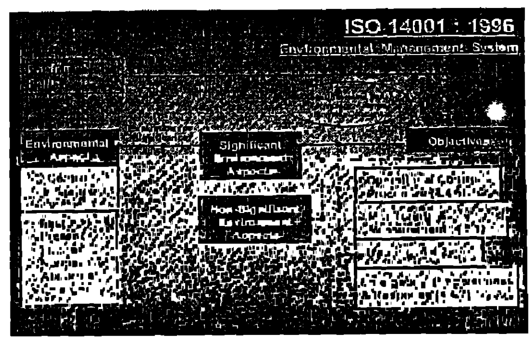
ISO 14001: 1996
Environmental Management System



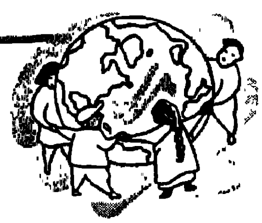
ISO 14001: 1996
Environmental Management System



ISO 14001: 1996
Environmental Management System



CORPORATE SOCIAL RESPONSIBILITY



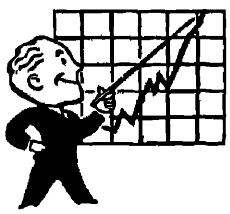
- V.V.SURYA RAU
RAJESH RAWAT
17th April 2001

Corporate Social Responsibility

- CSR is a concept which began in the West (USA) and is spreading worldwide
- CSR is concerned with treating the Stakeholders (both within & Outside the firm) ethically in a Socially responsible manner
- It is a Philosophy or a Vision about relationship of Business and the Society, to implement and sustain it over time

"One of the most socially responsible things most companies do is to be profitable" - *Joel Makeover*

Profits are essential not only to reward investors but also to provide sustainable jobs, pay fair wages, develop new products & contribute to the prosperity of the communities in which the business operates



Corporate Sustainability?

Sustainability is defined as

"development that fulfills the needs of the present without limiting the potential for meeting the needs of Future Generation"
- Brundtland

"Aligning an organisation's products and services with stakeholder expectations, thereby adding economic, environmental and Social Value"
-PWC

Is Corporate Social Responsibility (CSR) same as Corporate Sustainability (CSu) ?

- CSR defines Social responsibilities of a Corporation which will lead to Sustenance
- CSu defines Environmental issues to encompass both Social & Economic Concerns

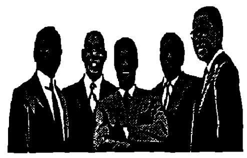
How much of Commitment is adequate ?



" Give it till it hurts"
Sri Ramkrishna Paramhamsa

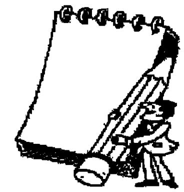
Dimensions of Corporate Social Responsibility

- **Customers**
- **Employees**
- **Business Partners**
- **Environment**
- **Communities**
- **Investors**

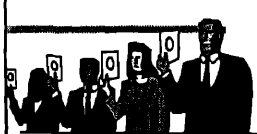


The Three Canvasses

- **International**
- **Indian**
- **Reliance**



There is no common Definition of Corporate Social Responsibility



Each Company responds in its own unique way depending upon its core competencies, stake holder interests and regional / cultural influences

Let us see What Corporates say ...

SHELL



Core Values

- **honesty**
- **integrity and**
- **respect for people**

Every year managers of Shell companies world-wide are required to write and sign three different letters covering performance in the areas of·

- Business Integrity
- Health, Safety and Environment (HSE)
- The Statement of General Business Principles

SHELL

Responsibilities:

- **Shareholders:** To protect shareholders' investment, and provide an acceptable return by Operating to best business practice
- **Customers:** To win and maintain customers by developing and providing products and services which offer value in terms of price, quality, safety and environmental impact
- **Employee:** To respect the human rights of their employees, to provide their employees with good and safe conditions of work, and good and competitive terms and conditions of service, to promote the development and best use of human talent and equal opportunity
- **Business Partners:** To seek mutually beneficial relationships with the Customers and Suppliers
- **Society:** To conduct business as responsible, corporate members of society, to observe the laws of the countries in which they operate, to express support for fundamental human rights in line with the legitimate role of business and to give proper regard to health, safety and the environment consistent with their commitment to contribute to sustainable development

EXXON MOBIL says

- We Pledge to be a good corporate citizen in all the places we operate worldwide. We will maintain the highest ethical standards, obey all applicable laws and regulations, and respect local and national cultures
- We are dedicated to running safe and environmentally responsible operations
- ExxonMobil, by producing energy at competitive prices, contributes a great deal to social welfare in ways that many people in developed countries are no longer sensitive to because they take a steady supply of clean, affordable energy for granted.

EXXON MOBIL believes that

- Well-run companies are socially responsible - far more than is usually conceded by critics - simply when they fulfill their basic function.
- The manner in which we conduct business - our standards of business conduct - is an important factor in contributing to social change.
- The special programs that we develop and support as we work in the poorest countries are closely aligned with the social and environmental needs of the people there
- We can productively work with many NGO's for the common good

DU PONT

Society Rules

- The principals in the company do not ask employees to do work they would not do themselves
- they would be active members of the community
- they would be good neighbors



DU PONT's Social Initiatives

- DuPont was one of the first companies in the world to institute a medical program for employees
- Built houses and schools for employees and provided recreation facilities
- One of the first companies to set up industrial medical research
- Maintain its reputation as a pacesetter in safety, health, and environmental matters, with a goal of zero incidents, accidents, and emissions
- In African villages, the company is helping fight guinea worm disease (Water Borne) by donating special nylon monofilament fiber filter
- Contributes over $30 million a year to support education, improve the quality of life, and enhance the economic vitality of local communities

GE stresses on Education



Initiatives towards Social Cause

- **Higher Education:** The GE Fund helps talented students go to college and ensure they have access to a quality education once they get there
- **Public Policy:** We seek to educate opinion leaders on critical issues such as trade, the environment and work force development
- **Pre College:** The foundation for lifelong success starts early, so the Fund's educational programs do as well.
- **United Way:** Our commitment to the United Way goes beyond employee campaigns and financial contributions.
- **Arts in Education:** Hands-on participation in the arts develops creative, disciplined and self-confident leaders.
- **Matching Gifts:** GE invented the corporate matching gift program, now used by more than 1,000 companies
- **International:** The GE Fund increases educational opportunity and quality around the world

DOW believes in

Elements of sustainable development:

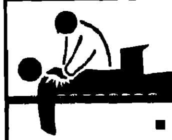
- Economic Vaibility
- Social Responsibility
- Environmental Integrity

Strategy: Set corporate targets and then to report in the form of Annual Public Report

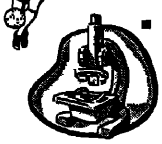
TATA

Improving the quality of Life

- Global competitiveness is the route to sustained growth and long-term success
- Our heritage of returning to society what we earn evokes trust among consumers, employees, shareholders and the community. This heritage will be continuously enriched by formalising the high standards of behaviour expected from employees and companies
- We must continue to be responsible, sensitive to the countries, communities and environments in which we work, always ensuring that what comes from the people goes back to the people many times over.
- Improve the quality of life of the communities we serve, through leadership in sectors of national economic significance







TATA

Social Initiatives

- **Tata Council of Community Initiatives (TCCI)** - Conducts vocational training, education and computer training to various sections of the community
- TATA trusts have sponsored and promoted a number of public institutions of national interest, including hospitals, education and research centres and scientific and cultural establishments.
- The Tata Group has promoted art and culture through the National Centre for the Performing Arts, and Marg Publications.

The group has also had a long and fruitful relationship with sports. This relationship has given the nation many stars and will continue to do so in the future.

ONGC says

- **Everyone who works at ONGC is responsible for protecting the environment, health and safety of our people and communities worldwide**
- **Institute named Institute of Petroleum Safety and Environment Management (IPSEM) had been set up in 1989 to deal with Environment and Safety Issues**
- **Our commitment to HSE performance is an integral part of our business, and achieving cost-effective solution is essential to our long-term success**



Views

- **Oil and gas conservation means their better and more efficient use with regard to economic, social or environmental costs and benefits, resulting in attainment of higher energy use efficiencies, minimization of wasteful practices and wastage and protection of the environment. - Ministry of Petroleum & Natural Gas on Conservation**
- **Central governments are now allocating more substantial portions of the national budget to local authorities and donor agencies are more willing to directly provide support to local authorities. This trend is coupled with the magnified interest in the role of NGOs and other elements of the civil society in providing improved mechanisms for targeting disadvantaged groups. The private sector is also seen less as an institution antithetical to public economies and more as a partner for governments seeking innovative ways to improve service delivery - United Nation Development Program**



At RELIANCE ,we believe



A citizen's role extends beyond his or her call of duty A responsible corporate citizen needs to look beyond the financial numbers of sales and profit growth, from year to year. **Reliance's concept of social responsiveness is intricately linked with people and their future.**



Reliance is committed to the development of the community around its manufacturing complexes Reliance's long-term aim is to raise economic standards of these communities, through self-sustainable measures.

RELIANCE... Our Social Initiatives

Health Care...



At Patalganga

85 bed DHA hospital on the Mumbai Pune National Highway to cater to the needs of the villages around and to the needs of many injured on the highway

At Hazira

Support to the local hospitals and providing a mobile health care facility



At Jamnagar

Round the clock manned health centre in the town ship

Motikhavdi medical centre that provides free service to all neighbouring villages

At Mumbai

Renovation and upgradation to the state of the art Harkisondas Hospital

RELIANCE... Our Social Initiatives

Education...



- Reliance has started JHA school upto CBSE for more than 1200 students
- JHA school at Surat and Jamnagar on similar grounds
- DHA scholarships for top performers in each district of Gujarat and Maharashtra
- Association with the commencement of International Business school at Hyderabad with Kellog- Wharton and other reputed business schools .
- Starting Indian Institute of Information Technology at Gandhinagar
- Interaction with IITs/Regional engineering colleges and Institutes of technolgy and Research Laboratories for industrial research, extended learning,chairs of excellence At Jamnagar



RELIANCE... Our Social Initiatives

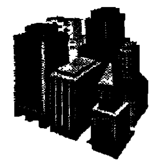
Education...



- Association with IIM, Bangalore ,for a six months course , sponsored by Reliance, for enhancement of Techno-commercial ,Business & Marketing skills of employees
- Providing Study leave and Scholarship for a two year course ,for employees, in the Indian School of Business , Hyderabad.

RELIANCE... Our Social Initiatives

Housing Development....



Reliance has built residential housing townships at all the manufacturing sites so as not to cause an undue burden on the local housing

The townships are examples of Reliance's commitment to it's own employees ,provided with International standard of amenities in sports, recreation while retaining the proud Indian heritage and culture.Seeing is believing.!!!!

RELIANCE... Our Social Initiatives

Drought needs....



- Reliance manufacturing facilities are located in the arid and drought prone Saurashtra region of Gujarat very close to the Marine National Park.
- Reliance has taken extreme care in not disturbing the ecology and has installed the largest desalination facilities in India and has in fact supplied 2 mgd of water to Jamnagar last year in the summer months.
- It is a zero discharge(liquid effluent)plant

RELIANCE... Our Social Initiatives

Sports, Service & Cultural Activities....



- Reliance has sponsored one world cup in Cricket.
- It supports various social activities such as self employment generation, Eye camps, Blood donation camps ,sports ,and many cultural activties of NGOs and professional bodies.

RELIANCE... Our Social Initiatives

Employment....

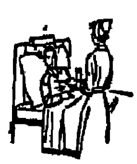


- With continuous exponential growth over the last two decades Reliance has generated both Direct and Indirect employment which needs no highlighting.
- It has developed craft training facilities which were well utilised in the erection of the plants.

RELIANCE... Assistance in Natural Calamities

Cyclone....

Jamnagar Cyclone in June 1998

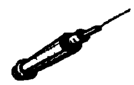


- 36 doctors and 43 paramedical staff were deployed to attend to relief operations. 19 lives were saved, and 378 injured persons were treated.
- One hundred water tankers were pressed into relief, and 200,000 food packets were distributed in 11 villages
- Chartered aircraft were pressed into service for supplying medicines and equipment to a hospital, and DG set power supplies were installed restoring power supply to the operation theatre at the City Hospital

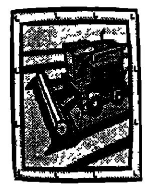
RELIANCE... Assistance in Natural Calamities

Earth Quake....

Earthquake at Bhuj in Jan 2001



- Contributed Rs.5 Cr. to Prime Minister's relief fund
- Adopted Anjar village - one of the worst affected
- Earthmovers, Medical Team, Cranes, Vehicles
- deployed in within 48hrs for relief measures
- Plastic Houses made for quick rehabilitation
- Food and Medical Supplies were rendered by Chartered aircraft



RELIANCE... Our Contribution to the Economy

Foreign Exchange Savings



- Reliance manufactures products that are import substitutes, thereby contributing to savings of precious foreign exchange for the country

Taxes Paid

- Reliance is among the top taxpayers to various government agencies, primarily by way of customs and excise duties

Export Revenues

- Reliance among the top manufacturer-exporters from India

What Corporates Gain from CSR ?

- Research shows corporates commanding upto 5% of premium on shares
- Social Accountability

Benefits of Social Corporate Responsibility

- Improved Financial Performance
- Greater Employee Commitment and Motivation
- Enhanced Customer Loyalty
- Minimised Risks
- Reduced Operating costs
- Enhanced Brand Image and Reputation
- Improved Stakeholder Relationships
- Improved standing amongst Investors
- Reduced Internal Operating Costs
- Better Internal Co-ordination
- Non-Financial Impacts on Community, Environment & Society
- Better defined Priorities
- Improved Compliance with regulatory bodies
- Identify Potential Liabilities

How can CSR be measured ?

Area 1 : Market and Society

- Company's Participation, Reporting, Customer Satisfaction, etc

Area 2 : Social Affairs

- Employment, Health Promotion, Education, Mentoring Minorities, Welfare, etc

Area 3 : Environment

- Reduction of Pollution, Emissions, Protection, Conservation, Recycling, etc

Some Performance Indices for CSR

Industrial Relations

- Any Strikes / Cessations
- Mandays Lost
- Employee - Employer Forums in the Company

Environment

- Separate Department to Monitor & Control Pollution & Effluent Levels
- Steps taken to Control
- Recycling Efforts

Safety

- Safety Measures are undertaken
- Reported Accidents, Audits, etc

Training and Development

- Amount Spent on Training & Development / Turnover
- % of No of Employee Trained / year

Performance Indices for CSR - contd

Welfare
- Programmes for Employees Family & Children
- Vocation Courses for Family members
- Surveys Carried out

Customers
- Complaints
- Awareness

Social
- Corporate Social Policy / Commitment
- Arts / Cultural Events, Health / Sanitation, Rural Welfare, Education, Disaster Relief, Urban Development Program, etc

Social Initiatives
- Employed Physically or Mentally less privileged persons

Is your Corporate Socially Responsible ?

- [x] Yes
- [ ] No

[illegible]



Thank You

"Business has a responsibility to give back to the Community, that is because the business is allowed to be there in first place.
The business ought to support the community. When you support the Community, the Community supports you back."

CORPORATE ENVIRONMENT EXCELLENCE

by

Y.K. SAXENA

WHY CORPORATE ENVIRONMENT EXCELLENCE



BECAUSE THERE IS NO RESET BUTTON IN THIS COMPUTER AGE

CORPORATE ENVIRONMENT EXCELLENCE

- 'that business should move beyond compliance to an approach based on continuous improvement in pursuit of environmental excellence' - WICEM 1, 1984
- ICC Business Charter for Sustainable Development launched - 1992 United Nation Earth Summit

Indian companies welcomed this initiative of Business Charter, however Indian Trade Associations were unable to encourage the Indian companies to adopt this charter and sign on behalf of Industry Associations.

- How to define Corporate Environmental Excellence ?
- What has been the experience of Ambuja Cement in this increasingly important area ?
- What advice and help can this Conference provide for companies and other business organizations ?

CORPORATE ENVIRONMENT EXCELENCE - THE AMBUJA CEMENT EXPERIENCE

1986 - 92 : Due to environmental concern we increasingly found our colleagues educating the company as well as Cement Industry - Rose Garden.

We were guided by our Account holder, to begin the process of turning our environmental critics into "Environmental Customers" - "I CAN".

1990 -92 : Educating the Villagers for Environment before land acquisition

1994 was the beginning of creating awareness for wider Indian community by sending green cards on World Environment Day.

The increasing commitment brought forward innovative ideas.

- utilization of waste fluorspar in the cement kiln
- utilization of a varied range of agro wastes as fuel supplement in the kiln
- 100% recycling of domestic waste water
- 100% restoration of mined areas
- water harvesting
- socio-economic & health surveys

STEPS TAKEN

- ISO 14001
- Voluntary Environmental Initiatives such as monitoring of AAQ, Infrastructure Facilities & involvement of villagers.
- Eco-Rating

Our Real Achievements

- Distinguished reputation for the excellent environmental management at all its plants.
- Known as a company setting standards for the Indian Cement Industry in the field of environmental management.
- Environmental Friendly Bulk Cement Transportation and Flyash utilization.

FUTURE DIRECTIONS

Three Key Points

- Mobilize Ambuja Parivar : ensuring that the company's commitment is both top - down and bottom-up.
- Initiative a pro-active dialogue with environmentalists.
- Start publishing environmental performance reports.

ENVIRONMENTAL CONCERN

1. **Review** All environmental policies and procedures are subject to regular review at the management level.
2 **Responsibility** The aim is to create among all employees, a sense of individual as well as collective environmental responsibility.
3. **Surveillance** A thorough and on-going monitoring of manufacturing processes and their effects in the vicinity.
4. **Assessment** This is a comprehensive forward-looking appraisal of the effects of new processes before implementation.
5 **Adopt** More environmentally sound processes and products.
6 **Precautions** Against Health & Safety.
7. **Purchase** Green products
7 **Communication** To provide governments, local authorities and the public with comprehensive information to enable them to understand the company's commitment as well as its operations.

Some Suggestions From Our Experiences

We should adopt best practices for Sustainable Development which provides a practical, credible framework for company.

Learn from companies who have dedicated themselves to change and are providing useful clues on how the corporate environmental excellence and sustainability agendas can be achieved.

THE GLOBAL COMPACT

The Global Compact is a partnership between the United Nations, the business community, international labour, and N.G.Os. It provides a forum for them to work together and improve corporate practices through co-operation rather than confrontation. The Global compact was initiated by the U.N. Secretary General Kofi Annan, at Davos two years ago when he said.

> "We have to choose between a global market driven only by calculations of short-term profit, and one which has a human face …. between a world which condemns a quarter of the human race to starvation and squalor, and one which offers everyone atleast a chance of prosperity, in a healthy environment".

While referring to the fragility of globalisation at Davos in January 2001, and the recent backlashes in the form of protests at Seattle, Prague etc, Kofi Annan said.

"Our challenge is not the protests we have witnessed, but the public mood they reflect and help to spread. For far too many people in the world today, greater openness looms as a threat – a threat to their livelihoods, to their ways of life, and to the ability of their governments to serve and protect them. Even when it may be exaggerated or misplaced, "fear has big eyes" in the words of the Russian proverb. And, we might add, it has the ear of governments, who feel compelled to respond.

But it is not the case that most people would wish to reverse globalisation. It is that they aspire to a different and better kind than we have today.

That was the over-riding message to come out of the United Nations Millennium Summit last September – the largest gathering ever of Heads of State and Government. Its purpose was to take a fresh look at the core priorities for the United Nations in the new century. None was ranked higher than the need to make globalization work for all the World's people.

At the Millennium Summit, our Heads of State and Government resolved to close these gaps – in the case of income inequalities to halve world poverty by 2015.

But the Summit also acknowledged that Governments alone can not achieve these aims. Accordingly, in their Millennium Declaration, the leaders endorsed the idea of strong partnerships with the private sector and with civil society organizations, working towards the shared goals of all humanity."

The Global Compact is based on a simple premise – that the goals of the UN and business are mutually supportive. The UN's goal is peace and development while that of business is to create and spread wealth and prosperity. Progress in each strengthens progress in the other. The UN business partnership underscores the essential role that private enterprise plays in improving living standards.

A stronger private sector worldwide and particularly the spread of foreign direct investment are already making a big contribution to the fight against poverty by spreading economic growth. By proposing the Global Compact, Kofi Annan has recognized the major change from the not-too-distant days when activities of companies worldwide were regarded as inherently negative, needing to be controlled and restricted. Today, governments everywhere are building their own strong and competitive private sectors and vie with each other to attract foreign investment.

In line with these changed perceptions of business, the Global Compact can give shape to the new relationship, and make it a working reality. The Global Compact asks companies to embrace, support and enact, within their sphere of influence, a set of core values in the area of human rights, labour standards and the environment. The principles are as follows :-

Human Rights

1. Businesses should support and respect the protection of internationally proclaimed human rights; and
2. make sure they are not complicit in human rights abuses.

Labour Standards

3. Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining.
4. the elimination of all forms of forced and compulsory labor;
5. the effective abolition of child labour; and
6. eliminate discrimination in respect of employment and occupation.

Environment

7. Businesses should support a precautionary approach to environmental challenges.
8. undertake initiatives to promote greater environmental responsibility; and
9. encourage the development and diffusion of environmentally friendly technologies.

These 9 principles are derived from universal values for human rights, labour and the environment already established by the Universal Declaration of Human Rights, the International Labour Organisations Declaration on Worker Rights and the Rio Declaration adopted at the 1992 UN Earth Summit. Embracing these principles will lead to embedding the global market in a network of shared values. At the same time Kofi Annan does not believe that labour, human rights, and environment standards should be enforced by the World Trade Organisation, in conformity with the views of the developing countries.

These principles can provide the social and environmental pillars for the global market – a market that is not a jungle where the strongest prevail, but a place of oppurtunity guided by social, environmental, and human rights imperatives that apply to all.

The compact asks that corporations take action only within their own spheres of influence. Specifically it asks business leaders to do three things.

- publically support the Global Compact and its principles;
- report on progress made or lessons learned once a year on the Compact website (www.unglobal compact.org); and
- engage in partnership with UN organizations in practical initiatives to support UN goals.

Hundreds of companies have become participants in the Global Compact which is rapidly evolving into the first global forum designed to address critical issues related to globalisation.

Nearly fifty transnational companies from such diverse sectors as media, mining, automotive, services, telecom, banking, petroleum, pharmaceuticals, software and footwear met in July, 2000 at New York under the leadership of the U.N. Secretary General. All of them took a public stand on the compact and its principles, thus kicking off a new move towards responsible corporate citizenship. Business Associations like the International Employees Association, the International Chamber of Commerce, and the World Business Council for Sustainable Development propose to use the framework of the Compact to address not only environmental but also social issues. A number of leading Civil Society Organisations like Amnesty International, The 'Save the Children Alliance, World Resources Institute, also attended and supported this effort.

Amongst the case studies reported so far by some of the global giants like Shell, Unilever, Glaxo Wellcome, BP Amoco, Ericsson are

- raising environmental standards by eliminating waste;
- adult literacy programmes;
- encouragement of sustainable farming, fisheries conservation and clean water stewardship;
- health care, water supply improvement;
- technical and hardware support for disaster relief by UN and other agencies;
- supplying medical know-how free over internet to least developed countries.

However, it should be understood that the Global Compact is not a regulatory instrument, a legally binding code of conduct, or a forum for policing management policies and practices. Nor is it a 'safe-harbour' allowing companies to sign-on without demonstrating real involvement and results. The compact is a voluntary initiative that seeks to provide a global framework to promote sustainable growth and good citizenship through committed and creative corporate leadership.

- faster and more generous debt relief
- increased official development assistance carefully targeted to make poor countries more attractive as investment destinations;
- and the full opening of rich countries' markets to poor countries products.

These broader social roles, of partner and advocate, may be relatively novel for the corporate world, but they can no longer be separated clearly from the standard business model nor can they be reduced to a question of philanthropy. Companies are learning that, as markets have gone global, so, too must the concept and practice of corporate social responsibility. And they are discovering that doing the right thing, at the end of the day is actually good for business."

He termed major corporations as the first truly global citizens and called upon them to ensure that everyone, rich and poor alike, has the chance to benefit from globalization.

THE GLOBAL COMPACT-II

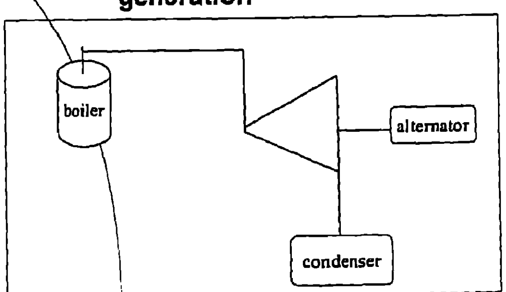
Barriers to Promotion of Cogeneration

Pradeep Dadhich
TERI

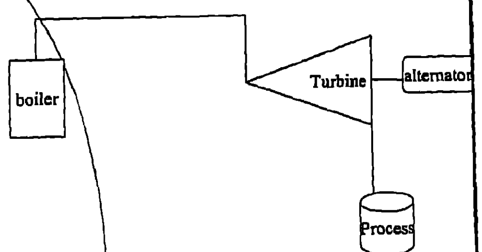
This presentation covers

- Brief concept of cogeneration
- Benefits of cogeneration
- Brief discussion on costing of Cogen power
- Current regulatory scenario
- Barriers

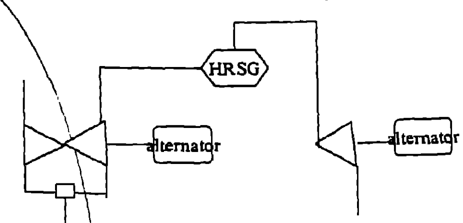
Schematic representation of Steam Turbine based power generation



Schematic representation of Cogen



Gas Turbine based Cogen



Benefits of Cogen

- High energy efficiency (> 70 %)
- Significant environmental benefits
- Low T&D losses
- High reliability
- Reduced energy bill
- Low cost power available to the utilities

Costing of Cogen Power

- The normal practice
  - Attribute all the capital cost to cost of power generation
- International Practice
  - By product costing
    - fuel attributed to cogenerated power+incremental capital cost.
    - heat attributed to cogenerated power

Current regulatory regime

- The SEBs are being restructured
  - GENCOs
  - TRANCOs
  - DISCOs
- SERCs decides the tariff
- SERCs have come out with CPPs

Major Barriers-I

- DISCOs/TRANCOs
  - current price set by MNES is higher than average purchase price from GENCOs
    - how SERCs determine tariff
    - Loss in revenue from industrial consumers
    - Cross-subsidization (Agriculture, residential)

Major Barriers- II

- power is not required during off-peak periods
- Interconnection costs to be borne by cogenerators
- power supplied by sugar mills is seasonal
- process fluctuations affect power supply
- Third Party sales are usually not allowed
- Banking/wheeling costs are very high

How do we promote Cogen ?

- Environment Policy
- Cost of cogenerated power should not be compared with average cost of power purchased
- Wheeling policy should not be based on current estimates of T&D Losses
- Third party sales should be allowed(?)

Pollution from Sugar Mills and Remedial Measures required

Mangal Singh,

Chief Executive, Triveni Engineering Works

Liquid Effluents

- In the overall context of liquid pollution besides the pollution perse, the consumption pattern both in the sugarcane farming as well as factories need to be considered. The problem is not limited to generation of effluents and their treatment at the processing factories and contamination of surface waters only. It is the contamination of subsoil waters and their fast depletion with impending danger of serious scarcity of water.

Fields

- Sugar cane crop is a heavy drawer of water, the flooding system of surface irrigation that generally practiced alongwith the application of chemical fertilizers and use of pesticides for control of sugarcane pests is causing serious contamination of surface and sub soil waters and causing depletion of the underground water resources. Several areas are faced with lowering of subsoil water levels and water scarcity situations. The ground water in villages is reported to have become unfit for drinking and so are many river waters. This situation is caused by leaching of chemicals by irrigation waters. In long term perspective it is imaginable that ground water is being transferred to seas to result in depletion of ground water on one side and rising level of seas on the other. The effect of this happening can well be imagined

Remedial measures

- The situation as noted above calls for serious considerations of the:
  - Measures for economy in the use of water for irrigation in the fields that is by change of irrigation practices to drip or sprinkler
  - Shift from chemical to bio-fertilizers
  - Change in methods of pest control from chemical pesticides to biological control of pests with integrated pest management approach the I.P.M
- For introducing economy in the use of irrigation water, popularization and progressive adoption of drip and sprinkler systems of irrigation should be the future approach and promotional strategies need to be formulated. Like wise there is need for a shift from chemical fertilizers to the organic and biomanures.
- The crop protection in the future years should be based on integrated post management which embodies changes in cultural practices and a thrust on systematic biological control of pests vis-à-vis production of the biopesticides.
- Actions as proposed above should find a prominent place in our agriculture policies.

Sugar factories

- The sugar industry is, perhaps erroneously, categorized as a hazardously polluting industry.
- In the context of the sugar industry processing sugarcane into sugar, several relevant facts need to be considered before even formulating the standards of generation, let alone the tolerance limits of disposal These are:
  - Sugarcane that the factories purchase contain about 70% water and it is proved that the factory plant requirement of water can be met by the water input in the factory with the sugarcane by following the system of condensate classification & recycling of water
  - The double sulphitation process that is followed by most of the factories in the country is such that no operation at any stage necessitates any regular generation of liquid effluent.
  - The only degradable product in the factory plant which can cause high B.O D or high C.O D is sugar and other intermediate process products which bear sugar, which passing into the effluent drain is a direct loss of sugar to the factory No prudent factory processor will allow that situation normally to happen.
  - The above is substantiated by a look on the process stages and the happenings over there such as
  - Process stages vs effluent generation

Process vs. Effluent Generation

- Sugarcane is prepared by knifing and shredding and milled where is gets divided into two fractions namely juice and the bagasse. The juice is taken to the boiling house for processing and bagasse is sent to boilers for burning and stacks for storage.
- The raw juice received in the boiling house is weighed, heated, treated with lime & sulphur (SO_2 gas) and allowed to settle in the settlers. The supernatant liquid is known as clear juice, which is further sent for evaporation The muddy fraction is filtered and the press cake is discharged into the trolleys and transported to the fields as fertilizers and the juice is returned to the main stream
- The clear juice received is subjected to evaporation in multiple effects where the vapors are used for heating in various stages and only little fraction of vapors finally condensed. The juice is converted into thick syrup and the vapors are condensed by cooling in the cooling towers or spray ponds leaving very little to be rejected out. The out flow here is vapor condensate only
- Syrup is converted into massecuites
- The massecuites are fractionated in the centrifugal as sugar and molasses which are sent to the respective storage places in godowns and tanks

It would thus be noted that in the process, the zero pollution approach seems to be possible. It is to be noted that the sugar in drain is a pollutant but in the bag it is money

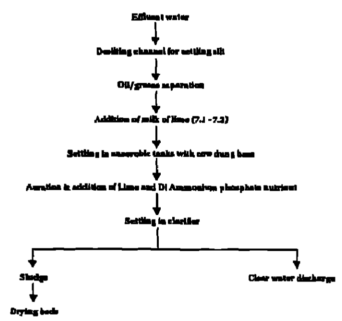
Residual Generation of Effluents

- Despite the above, generation of the liquid effluent in a large processing unit cannot be denied because it can result from the cleaning of the vessels periodically and even washing of the floors or use of toilets and washing rooms. This, however, leads one to think that the normal standard generation that is assumed is the standards, probably on the basis of random surveys is not very correct because the standard say that a 100 ton per hour cane processing plant requires about 200 ton of water per hour. Our studies and operations of the plants have proved that this requirement could be brought down to almost 10% thereof which would be naturally ending up in the reduction of the effluent generation to that extent.
- A reference is invited to the book "Effluent management of sugar factories" authored by Mangal Singh wherein two chapters are dedicated to the water management and water pollution and its controls.
- Modern day management's of the sugar mills are now fully conscious to the economy of the water and its drawl from the natural sources in view of the substantial cess imposed thereon and secondly the management's are now operating on the philosophy of investing in the water management through classification and recycling rather that in the treatment of the effluent and that has resulted in fair reduction of the effluents.

Tolerance Limits

- The environment protection rules have prescribed the tolerance limits as follows:
  - B.O.D. (5 day 20 deg. C): 30 for disposal in surface water and 100 for disposal on land.
  - Suspended solids: 30 for disposal in surface water and 100 for disposal on land.

Process of Treatment Generally Followed



Remedial Measures

- For conservation of natural water resources the approach has to be for economies in the use of ground water It is proved that the plant operations can be managed by systematic management with recoveries and classification of the condensates available from the cane water that enters the factory.
- The major quantities of water used as coolant on machineries and process stages need to be managed by recycling, the systems for which are well established.
- The residual liquid effluents the generation of which should be managed by above practices should be recycled to soil through irrigation and for social forestry, which several factories are already practicing
- Keeping the above in view the factories have to adopt the approach of investment in water management as against the treatment of effluents
- It is also evident that there is not any presence of hazardous chemicals in the out flow and as such the sugar industry should be out of the list of hazardous polluting ones.

Air Pollution

- Sugar mills are using mill wet bagasse as fuel. Boilers in use have different types of furnaces and operate on different pressures right from 11 kg/sq.cm. to 80 kg/sq cm. The high-pressure boilers with suspension burning systems have been introduced in the industry in a progressive manner
- In order to contain the purity of the air, pollution control boards have set standards of tolerance of suspended particulate matter in the chimney flue gases for different designs of the furnace. SPM tolerance limits are as follows.

Boiler furnaces	Tolerance limits
Step grate	250 mg/Nm.cu.
Horse shoe & pulsating grate	500 mg/Nm.cu.
Spreader stocker	800 mg/Nm.cu.

- These levels are based on CO_2 percentage in the flue gases being 12%
- The level of CO_2 gas indicates good or bad burning of bagasse in the boilers.

Air Pollution (contd.)

- In the earlier days taller chimneys were made with the objective of dispersion of unburnt particles in a wider area
- In the years that followed with the pressure of the steam generation going up, next generation of fly ash arresting system was the introduction of multicyclones in flue path.
- The use of multi-cyclones, however, has not been able to solve the problem in totality and subsequently introduction of gas scrubbing by water followed and several plants are now using this system for containing for emissions. Recently the electrostatic precipitators are also being tried but the problem of application is posed by congested layout in most of the old plants that have grown in capacity over the years
- In order to contain the purity of air it is desirable that this approach is continued

Conclusion

- Sugar industry is not a hazardous polluting industry. Recycling of water and reclamation of condensates with proper system design of water management can lead towards zero pollution approach and the small quantities generated could be back to soil through simple treatments as discussed.
- Likewise the air pollution can be and should be controlled with scrubbing of flues to arrest the fly ash or by introduction of electrostatic precipitators.

Biotechnological Applications to Reduce Pollution

Bioremediation of Oily Sludge

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Indian Oil Corporation
Research & Development Centre
Faridabad

Background of the Problem
Magnitude of Waste - Glimpses

- **Crude oil Refining - Oily Sludges**
  - **US Refineries: > 1 million tons/year**
  - **India: 20,000 tons/year**
    (0.002 - 0.1%, wt. of Crude Processed)
- **IOCL: Current inventory**
  - **Refineries**
    - **Sludge Generation (1999-2000): 13763 tons**
    - **Closing Balance: 16449 tons**
  - **Marketing Installations**
    - **Others (?)**

Bioremediation Technology

Overseas Scenario
- **Several companies world wide provide services**
- **Microbes proprietary and not offered**
- **Overall process treatment becomes costly**

Indian Efforts
- **TERI under DoB project developed a microbial blend - 'OILZAPPER'**

"OILZAPPER" Technology

- A selected consortium of five microbes
- Grown on mineral media with molasses as carbon source
- Mixed with natural carrier material
- Degrade various sludge components

"OILZAPPER" Technology

IOC (R&D)- TERI Interface
- Scale up up to semi-commercial level
- 1000 lit fermenter batches
- 2000 Kg product produced
- Field trials of produced material
  - MR
  - IOC (R&D)

"OILZAPPER" Technology

IOC (R&D)- TERI Interface

Scale up: Several Process Improvements
- **Process consolidation**
- **Media components optimization**
- **Microbial growth rate optimization**
- **Blending operation**
  - **Reduced Overall Process Cost**

Development of New Generation Product "Super-oilzapper"

Plans & Progress
- IOC (R&D) & TERI Jointly
- Technology exclusive to IOC & TERI
- **A new blend of five microbes**
- New Product Attributes
  - Broad range contaminant removal
    - **including organosulfur compounds**
  - More efficient than conventional "Oilzapper"
  - More cost competitive

Development of New Generation Product "Super- oilzapper"

Work in hand
- Preparation of new blend in 10 lit fermenter
- Experimental field trial at IOC(R&D) & MR
- For large scale trials Six other sites also identified
- IPR Protection- Patent drafted

Development of New Generation Product "Super- oilzapper"

Future Plan
- Process scale up 100, 500 & 1000 lit
- Large scale field trials
- Trade mark Protection
- **Regulatory Approvals**

Development of New Generation Product "Super- oilzapper"

Future Prospects
- **Possible Clients**
  - Indian refineries
  - Marketing
  - Pipeline
  - Oil spill sites
  - ONGC/OIL
- Large Demand exists for Overseas market
  - **Inquiries from Middle East**

Conclusions

- Oily sludge accumulation a perennial problem for refineries
- Existing disposal options environmentally questionable & costly
- Bioremediation an ecofriendly & cost effective option
- Immediate & future prospects for **"SUPER - OILZAPPER"**

Analysis of Policy statements

Project status- Ongoing

Dhenuka Srinivasan

Corporate Roundtable on development of strategies for the Environment

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For WHOM

As part of the ongoing set of CoRE activities for the CoRE members

Aiming at helping member corporates develop strategies for industrial sustainability.

WHY

Policy statement is the only document available in public domain

Help corporate in achieving their missions + highlight such accomplishments

IN A BETTER WAY

Objectives

- Analyze the policy statements of some of the leading Indian Corporates
- Compare these with environmental policies of International Corporates
- To reflect and draw overall achievement and environmental performance with respect to Env policy

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To Refresh

Environmental policy, as put forward in ISO 14001 is

"statement by the organization of its intentions and principles in relation to its overall environmental performance which provides a framework for action and for the setting of its environmental objectives and targets"

EMS policy requirements (as per ISO 14001)

- Comes right from the top management
- Needs to be appropriate to the nature, scale and environmental impacts of its activities, products and services
- Commitment to:

Continual improvement & prevention of pollution

Comply with environmental legislation, regulations and other requirements

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Further....

It should provide framework for setting and reviewing objectives and targets

Well documented, implemented, maintained

Well communicated to all employees and other stakeholders

Sets foundation for an effective environmental management system.

Based on collation of ISO requirements

Environmental Policy is

- A statement of commitment in the public domain
- Reflects evidence of support from top management
- Could have far reaching business implications
- Is usually a relatively long lived document

Scope of the study

The proposed study aims to examine the collected policy statements and analyze these essentially at two levels:

- The mission statement
- Specific policies or commitments to address and fulfill its mission statement

Further scope includes:

Analysis to check ADEQUACY of levels at which the policy is defined

Analysis to find how the policy is being MARKETED as a PR Product

Analysis to check how WELL does it cover the nature of operations, their impacts

Analysis of policy statement wrt achievements made(like resource conservation, pollution prevention and control etc)

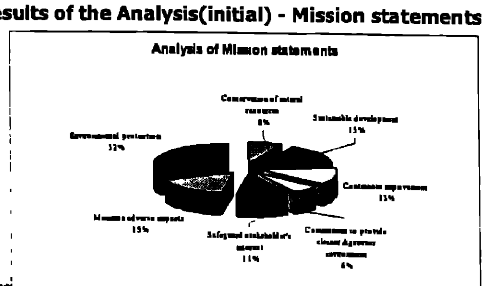
Information sources

- TERI BT Survey

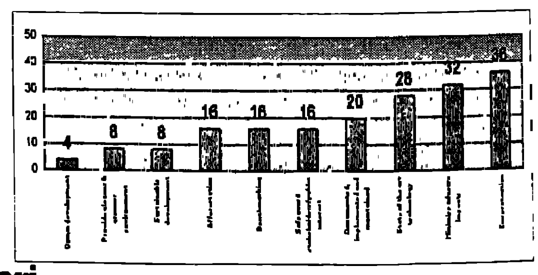
Survey Available at:
www.business-today.org and www.teriin.org
Issue hitting the stands on - The World Earth day

- Websites of some leading Corporates
- Inputs from the partcipating corporates

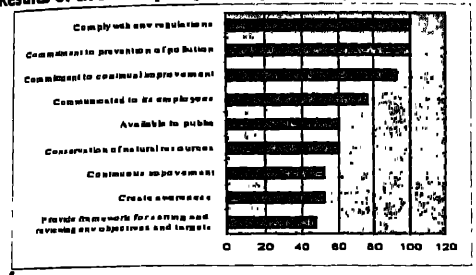
Results of the Analysis(initial) - Mission statements



Results of the Analysis(initial) - Policy statements



Results of the Analysis(initial) - Policy statements



Results from the survey analysis

Though 77% of the corporates have an environmental policy, an analysis of levels at which this document exists:

At corporate level-48%
At facility level-50%
At both levels-21%

Results from the survey analysis

On the basis of:

Sectors	Parentage
Turnover	Export Percentage

Sectors

Level	Engg %	Minerals %	Chemicals & pharma %	Other Mnfg %	Services etc. %
Exists	67	89	80	71	75
At both levels	17	33	27	0	25
At Co level	42	67	47	43	50
At facility level	42	56	60	29	50

Parentage

Parameter	MNC	Non MNC
At corporate level	66.66	66.66
At both levels	41.6	12.12

Conclusions

Environmental policy should be

- **Well Defined**
- **Not generic**
- **Reflect efforts and achievements**
- **Long lasting**
- **Well Marketed**

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Corporate Roundtable on development of strategies for the Environment

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CoRE Conference on "Corporate Strategies for Sustainable Development"

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Corporate Roundtable on development of strategies for the Environment

CoRE Conference on "Corporate Strategies for Sustainable Development"

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Corporate Roundtable on development of strategies for the Environment

CoRE Conference on "Corporate Strategies for Sustainable Development"

Other documents circulated in the conference

Corporate Social Commitment

Introduction

All economic activities are measured in the universal language of money. Corporations are one of the main players of the world who are continuously trying to enhance the quality of life while enriching selves. Any initiative that merits a corporate involvement would warrant both the areas to be measured in the same language. The current flavour of the month CSR has its current champions from the large American Enterprises.

Based on the research reports from the net, the corporations in the west are guided by the need for Corporate Sustainability and C Su is replacing the CSR.

Looking back into our own Manu Dharma Sastra one sixth of the earnings should go to the state, one sixth to savings (Growth), one sixth to charity (Society) and the balance for maintaining the self.

Our current Tax structure combines the State's role with charity. C Su is not charity. There is always the nagging question in the minds of the CEOs how much commitment is adequate. Since we are speaking of this initiative in the orient please allow me to quote Bhagawan Shri Ramakrishna

" Give till it hurts you "

It is ESI an acronym which I would like to patent.
ESI stands for **Enlightened Self Interest.**

Investing in Social cause also demands a Cost Benefit Analysis by the Corporates because:

- Profits also lead to not only sustain growth of Corporates but also of Businesses that they serve and opens avenues for Employment, Spending Capacities for individuals and Economic Growth. The money thus shelled out for Social Purposes must be to appreciate the enhanced benefit and to direct the same towards a certain section / cause.
- The Corporates donating to NGO's / Government bodies must be conscious keepers of the effectiveness and results of the programs that their money facilitates.

Social Needs

The society for corporates is primarily located around its manufacturing activities. Hence Responsibilities of the Coporates are centered around their Complexes.

Before we progress on this subject the first prerequsite is to identify the social needs and then we can debate how the corporates can and should fulfil the responsibility.

In our country the primary needs are health, education, employment, transportation (infrastructure) in that order.

Health: An enlightened strategy is to focus the resources first in the area of health promotion and protection. Most of the diseases in India are supposed to be water borne. In spite of big schemes announced with fanfare the availability of clean drinking water is as elusive as ever even in the cities leave alone the villages. The mixing of sewage with drinking water is infamous for the spread of hepatitis in cities.
The primary focus of the corporates should be in providing both infrastructure and clean potable water to the people within 10 / 20 / 30 kms of the establishment.
A similar focus is needed on the sewage collection and treatment. Corporates could focus in improving the water management in an integrated manner.
Health promotion is the most economic way of enhancing the health of people. Yoga and other such initiatives should be encouraged. Alternative therapies could be fore runners to full-fledged hospitals and clinics.

Education: Education is considered to be the universal panacea for all the ailments and hence should be the next to receive the attention. Corporates should actively involve in developing education that leads towards self-employment. More focus should be on vocational training. The country very badly needs skilled technicians to service the growing middle class population. They should encourage excellent performers to enhance the spirit of competetive learning. In the era of renewal of computer hardware the corporates should be able to transfer the same to the educational institutions and participate actively in enhancing the standards in the education around the manufacturing sites

Employment: Most of the people aspire for permanent employment by the corporate. This is normally restricted to a competent few and a majority of the people feel left behind. The indirect employment provided by the corporates needs highlighting.

There are many other social and cultural initiatives that the corporates can indulge in the area of sports, Gardens, cultural functions, etc which I leave to the respective enterprising skills.

How do these initiatives assist the corporates in improving their bottom line?

Stock Appreciation: Western research has shown that the responsible corporates are able to command a 5 % premium on the share. ABB has been identified as the most favoured C Su based on it's demonstrated commitment to society.

Accountability: Corporates are perceived to be efficient in utilisation of resources and delivering results with accountability. Innovation is required in tapping the funds from the Government (and other international sources) in proportion to the corporate commitment and the same be spent through a tripartite manner for the development of the society. NGO s with reputed background should also be involved in the implementation and get the expenditure audited by social accounting auditors.People are known by the

company that they keep It essential that corporates associate themselves with organisations of repute in ensuring the money is well spent . It is imperative for the corporates to announce their commitment in their business principles endorsed by the CEO and the performance reported in the annual reports.

Disaster: The Society looks for solace, rescue and relief from the corporates in the hour of natural calamities and disasters. At times of drought the society expects supply of water fodder for cattle. At the time of cyclone it looks for shelter and rehabilitation after the cyclone. In case of earth quake it looks for removal of trapped personnel under the debris and medical relief. It looks for communication facilities and assistance in restoring normal life.

How does one measure CSR?

Institutions / Government Bodies have Identified Performance Indices to measure the CSR of an Organisation. Social Audits aims to define Corporate's Social & Environmental Impact, measure and evaluate the impact and communicate their performances.

Reliance believes....

A citizen's role extends beyond his or her call of duty. A responsible corporate citizen needs to look beyond the financial numbers of sales and profit growth, from year to year. **Reliance's concept of social responsiveness is intricately linked with people and their future.**

Reliance is committed to the development of the community around its manufacturing complexes. Reliance's long-term aim is to raise economic standards of these communities, through self-sustainable measures.

Reliance's Social Iniatives

Health

Patalaganga

85 bed DHA hospital on the Mumbai Pune National Highway to cater to the needs of the villages around and to the needs of many injured on the highway

Hazira

Support to the local hospitals and providing a mobille health care facility.

Jamnagar

Round the clock manned health centre in the town ship

Motikhavdi medical centre that provides free service to all the villages

Mumbai

Renovation and upgradation to the state of the art Harkisondas Hospital

All manufacturing site provided with the state of the art facilities for protection of the employees own as well as contractors through proper design. monitoring ,procedures and monitoring systems

Many proactive health care programmes are regularly conducted such as Yoga,Art of living,Gymnasium, Sports facilities of international standards

There are innovative incentive schemes for encouraging good health and physical fitness.

Education

Instead of being a drain on the existing overcrowded facilities Reliance has started JHA school upto CBSE for more than 1200 students

JHA school at Surat on similar grounds

JHA school at Jamnagar on similar grounds

DHA scholarships for top performers in each district of Gujarat and Maharashtra

Association with the commencement of International Business school at Hyderabad with Kellog- Wharton and other reputed business schools .

Starting Indian Institute of Information Technology at Gandhinagar

Interaction with IITs/Regional engineering colleges and Institutes of technolgy and Research Laboratories for industrial research, extended learning,chairs of excellence

Association with IIM, Bangalore ,for a six months course , sponsored by Reliance, for enhancement of Techno-commercial ,Business & Marketing skills of employees.

Providing Study leave and Scholarship for a two year course ,for employees, in the Indian School of Business , Hyderabad.

Housing Development
Reliance has built residential housing townships at all the manufacturing sites so as not to cause an undue burden on the local housing. The townships sre examples of Reliances commitment to it's own employees and has provided with international standard of amenities in sports, recreation while retaining the proud Indian heritage and culture.Seeing is believing !!

Drought needs
Reliance manufacturing facilities are located in the arid and drought prone Saurashtra region of Gujerat very close to the Marine National Park.
Reliance has taken extreme care in not disturbing the ecology and has installed the largest desalination facilities in India and has in fact supplied 2 mgd of water to Jamnagar last year in the summer months.
It is a zero discharge(liquid effluent)plant

Sports ,Service and Cultural activities
Reliance has sponsored one world cup in Cricket. It supports various social activities such as self employment generation, Eye camps, sports ,and may cultural activties of NGOs and professional bodies.

Employment
With continuous exponential growth over the last two decades Reliance has generated both Direct and Indirect employment which needs no highlighting.
It has developed craft training facilities which were well utilised in the erection of the plants.

Reliance's Assistance in Natural Calamities

Cyclone....
Jamnagar Cyclone in June 1998

36 doctors and 43 paramedical staff were deployed to attend to relief operations. 19 lives were saved, and 378 injured persons were treated.
One hundred water tankers were pressed into relief, and 200,000 food packets were distributed in 11 villages

Chartered aircraft were pressed into service for supplying medicines and equipment to a hospital, and DG set power supplies were installed restoring power supply to the operation theatre at the City Hospital

Earth Quake....
Earthquake at Bhuj in Jan 2001

Contributed Rs.5 Cr. to Prime Minister's relief fund

Adopted Anjar village - one of the worst affected

Earthmovers, Medical Team, Cranes, Vehicles

deployed in within 48hrs for relief measures

Plastic Houses made for quick rehabilitation

Food and Medical Supplies were rendered by Chartered aircraft

Reliance's Contribution to the Economy

Foreign Exchange Savings
Reliance manufactures products that are import substitutes, thereby contributing to savings of precious foreign exchange for the country
Taxes Paid
Reliance is among the top taxpayers to various government agencies, primarily by way of customs and excise duties
Export Revenues
Reliance among the top manufacturer-exporters from India

"Business has a responsibility to give back to the Community, that is because the business is allowed to be there in first place, the business ought to support the community. When you support the Community, the Community supports you back."

WELCOMENVIRON

UNINTENTIONAL WASTAGE OF WATER

Activity	Method Adopted	Qty. used Ltr.	Method to be adopted	Qty. required Ltr.	Qty. saved Ltr.
Brushing Teeth	Running tap for 5 min.	45	Tumbler or Glass	0.5	44.5
Washing Hands	Running tap for 2 min.	18	Half filled wash basin	2.0	16.0
Shaving	Running tap for 2 min.	18	Shaving mug	0.25	17.75
Shower	Letting Shower run while soaping staying under Shower too long	90	Wet down, tap off, soap up, rinse off	20.00	70.00
Flushing Toilet	Using old fashioned large capacity cistern	13.5 or more	Dual System short flush liquid waste, Full flush solid waste	4.5 9.0	4.5 or more
Watering plants	Running hose for 5 minutes	120	Water can	5.0	115.00
Washing floor	Running hose for 5 minutes	200	Mop and bucket	18.0	182.00
Washing Car	Running hose for 10 minutes	400	Buckets (Two)	18.0	382.00

PLEASE USE WATER WITH CARE !

THANK YOU

WELCOMENVIRON
WATER MANAGEMENT STRATEGY

The key in our strategy is SENSITSATION / CONSERVATION / WATER TABLE ENHANCEMENT.

☞ SENSITISATION: thru' children - they are best carrier / disserminators of knowledge
hand over water conservation pamphlet
beam message thru' CCTV operator.

☞ CONSERVATION : no/low/high cost strategy.

☞ NO COST : close half/three fourth valve below the wash basin.
fill mineral water bottle with water cap it and put inside the w/c. This action alone will save 6000 litres p.a. per family.

IF ALL THE SUGGESTIONS OF THIS PAMPHLET ARE FOLLOWED 50% OF CURRENT WATER USAGE CAN BE SAVED PER DAY APPROXIMATELY.

☞ LOW COST : insert shower like device in the mouth of the water hose - to retard flow.
- invest in sprinkler system--current watering practice is highly water intensive/ wasteful.
- water meter for every house.

☞ HIGH COST : install ETP PLANT (for large housing complexes) for treating water so that it can be utilised for horticulture purpose. Many industries are already following this practice.
look at options whereby treated water is used for :
FLUSHING / GARDENING / OTHER NON-CONSUMPTIVE PURPOSE.

☞ WATER HARVESTING : The options :
- well for each building or acluster harvesting approach.
- well for each town house.
- water flowing into the storm drain transferrd into a holding tank and then to a open well (as done by many organisation in Delhi).

☞ XERISCAPE : this is a form of landscaping where a number of plants, cacti is used which is not water thirsty to have a green cover, thereby reduce water consumption DRASTICALLY.

☞ EXTERNAL STRATEGY : once we have started implementing above SUGGESTED ACTIONS we need to reach out to the communities around us in order to create SUSTAINABLE PRACTICES for common advantage.

☞ WATER EXPERTS : DELHI JAL BOARD
CENTRE FOR SCIENCE & ENVIRONMENT - DELHI

WATER SAVED
POWER SAVED

WATER

SOCIAL, POLITICAL, ECONOMIC AND ENVIRONMENT FACETS

SOCIAL

Everybody thinks water is a gift of God and therefore do not want to pay for it.

POLITICAL

By and large in most countries politicians use it for garnering votes through a combination of giving it free or charging negligible amounts which does not even take care of the water infrastructure. Free power for agriculture results in wasteful usage of water.

ECONOMIC

Since poor price signals are sent there is nearly 50% wastage across the following three sectors - farming / industry and domestic. People remember their energy bills but not their water bills !

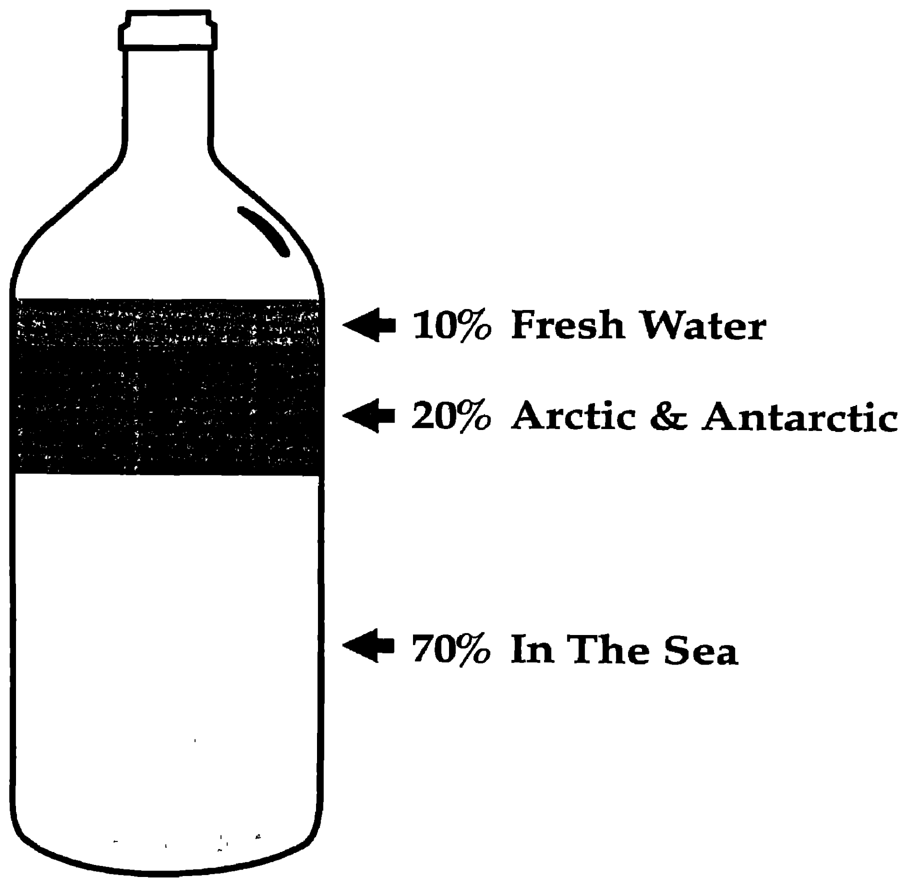
ENVIRONMENT

The deeper we go to MINE WATER it will result in :

- *Higher Energy Cost.*
- *Installation of larger Horsepower Motor to Extract Water.*
- *Greater Degradation of our quality of air.*
- *Greater concentration of natural minerals in the soil which will enhance the fluorine / arsenic content of the water (W. Bengal, parts of Maharashtra examples of this problem).*
- *Land subsidence.*

WELCOMENVIRON

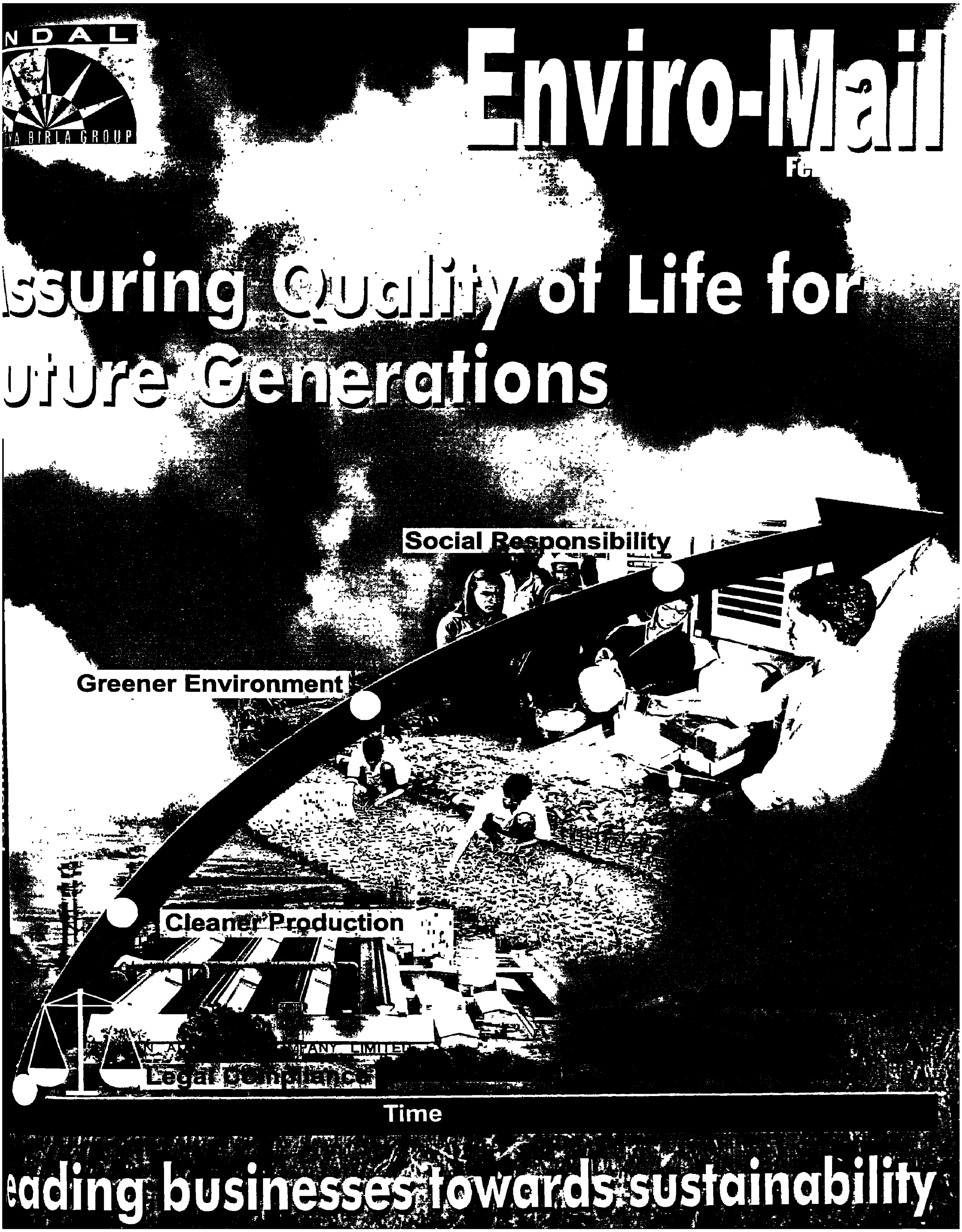
GLOBAL WATER AVAILABILITY



Save one litre precious water in each flushing cycle by placing a litre water bottle filled with water, inside the water closet system. Every person can save atleast 365 litres per annum !!!

ITC HOTELS LIMITED

Corporate Office : ITC Hotels Limited, A-9, USO Road, Qutab Institutional Area, New Delhi - 110067, India.
Tel. : 6850242, Fax : 091-11-6863715
Website : http://www.welcomegroup.com


NDAL
A BIRLA GROUP
Enviro-Mail
ssuring Quality of Life for
uture Generations
Social Responsibility
Greener Environment
Cleaner Production
Legal Compliance
Time
eading businesses towards sustainability

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Environmental Policy Statement

We at Indal believe that protection of the environment is our prime corporate responsibility. While carrying out all our businesses we are committed to the principles of Sustainable Development. We will make continual improvements in our operations to ensure ecological balance while achieving economic growth.

To meet the above goals, we will strive to:

- Constantly improve upon the standards, wherever environmentally beneficial and techno-economically feasible, consistent with sustainable industrial growth.
- Achieve improvement in eco-efficiency in all operations, setting standards in environment management and incorporating cleaner technologies in new/expansion projects.
- Actively participate in social welfare and environment developmental activities for the communities around our units.
- Provide leadership in the use of environmental management systems and develop employee awareness of environmental responsibilities.
- Set up an Environmental Performance Assurance Process and comply with all applicable laws governing environmental protection.

9 November 2000

S.K. Tamotia
President & CEO

INDAL re-defines its Environment Policy

Our Vedas pronounce the glory of the Sun as "the One, who is responsible for giving life and hope to all living beings, especially mankind". Similarly, the Aditya Birla Group, with the Rising Sun logo, symbolises hope for the growth and prosperity of Indal, under the dynamic and progressive leadership of Mr Kumar Mangalam Birla.

Over the last six decades Indal has not only established a reputation as a supplier of quality aluminium products, but has also imbibed the strong environmental management systems of its former parent company, Alcan. Despite having to work with older technologies and plant design, Indal has accomplished several environmental achievements and many Indal plants have won state and national level environmental awards. Through its proactive approach in *Resource Conservation, Pollution Prevention* and *Community Development*, especially in under-developed and under-privileged areas, Indal has amply demonstrated its role as a Responsible Corporate Citizen.

Drawing on the synergies of the Aditya Birla Group, Indal will now be embarking on a growth plan of expansion and development. To meet the challenges of the future, Indal's President & CEO, Dr. S. K. Tamotia, has declared the new Corporate Environmental Policy for implementation by all Indal Units.

Our commitment

In the preamble, Dr Tamotia emphasises that, being a responsible corporate citizen, we take the ownership for environmental protection, arising out of all our business activities. In order to meet this goal effectively we subscribe to the principles of Sustainable Industrial Development. Leading business communities world over have been embracing these principles, to ensure long-term survival and acceptance by all segments of society.

In principle, *Sustainable Development requires that, we meet the needs of today without compromising the ability of future generations to meet their own needs.* Applied to our present operation, it essentially means that 'we consume less, while producing more' (to adapt from *Gandhiji's words – what you need and not in greed*) or in other words, enhance our efforts towards 'conservation of resources'. Secondly, in case the discharge of waste is inevitable, then it should be done in such a way that future generations will not accuse us for causing environmental degradation. In short, it prescribes adoption of pollution prevention approach while managing wastes.

The preamble also states that above approaches will not be one-time activities but practised on a continuous basis to meet the changing environmental demands.

Above all, the focus must remain on maintaining ecological balance (natural resources and environmental conditions) and industrial development. This entails that we evaluate our performance against economic, environmental and social factors associated with our business and take a proactive approach in responding to them favourably.

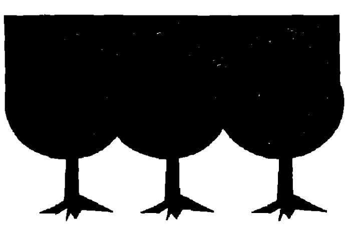
In order to achieve the above goals, the policy outlines specific approaches:

Develop and operate with high Environmental Performance Standards



While the law provides standards for discharge of pollutants, it would be safer to develop and operate with *our own standards* that are more stringent than stipulated. However, care should be taken to see that by doing so, the receiving environment is really benefited and it does not abnormally affect the company's bottom line.To give a few examples, at our Durgamanwadi Mines near Kolhapur, Maharashtra, during the rainy season, the storm water is filtered using simple settling tanks and silt-check dams ensuring *quality tandards* that surpass the quality of the receiving river. Besides it also exceeds the discharge tandards stipulated by the Pollution Control Board. This has helped in alleviating fears that ıining causes siltation in the surrounding water bodies. The second example is that of Hirakud 'ower. Prior to 1996, the surrounding community used to complain about fugitive dust from the uel Handling Plant. The dust collection/suppression measures adopted have now ensured ıat the air quality standards achieved are more than acceptable for the surrounding community. 'owever, one needs to develop specific environmental performance standards commensurate 'ith the local environmental needs.

Eco-efficient operations

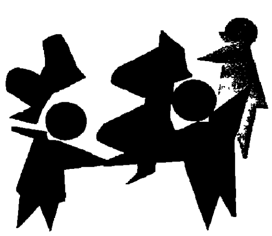


We all know that environment provides us natural resources. Some of these resources like petroleum products, coal, etc., are limited in supply while others are renewable. Over-consumption of exhaustible esources would not only lead to shortage but also excessive discharge of wastes, thus degrading the environment and creating imbalance in the eco-system.

Our second policy guideline focuses on making our *operations cleaner*. We will constantly explore opportunities for reducing specific consumption of all resources, whether they are renewable or exhaustible. In all the current business activities, we will adopt waste minimisation programmes, whereby hidden wastes are exposed and avoided through appropriate operational controls and maintenance practices.

At many of our plants, water (a cheap but invaluable resource) was being consumed excessively putting a strain on the source as well as fear of pollution. Some plants like Belgaum and Muri Alumina, Hirkaud Smelter and Belur Sheet have taken several initiatives to conserve water to the extent that they are close to a zero-discharge situation. These improvements are primarily a result of *cleaner production programmes* and similar other examples of pollution prevention have lead to the belief that there is substantial scope for improving eco-efficiency of our products and processes regardless of old or new technologies. Our programmes under this guideline will bring in both economic and environmental benefits.

Social Accountability



No industrial unit can operate in isolation especially in the large-scale sector. Communities located around such industrial units always have some expectations with respect to their *quality of life*. Therefore, as a responsible corporate neighbour, one will have to understand their 'environmental and social expectations' and respond to them in an appropriate manner.

While eco-efficient operations would help in minimising the negative impacts, a few activities that enhance the natural resource management such as water harvesting, green cover development, welfare activities like healthcare, education and income generation would go a long way in inducing our host communities to become our partners-in-progress.

Indal's mines at Durgamanwadi and Lohardaga best illustrate this approach. Other units also have similar programmes under implementation.Our experience in these areas has shown us that while we are keen on making our processes cleaner, we also need to be alive to the socio-economic-environmental expectations of the surrounding communities.

Use of Environmental Management Systems (EMS)

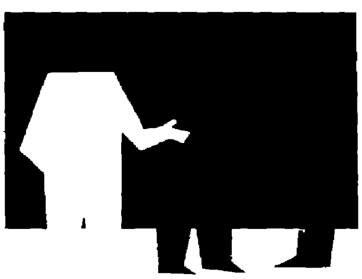

Indian Aluminium Company Ltd
BS EN ISO 14001:1996

The last decade has witnessed the emergence of a number of management systems, each one focusing on a particular aspect of industrial operations - ISO 9000 for Quality and ISO 14001 for Environmental Management and so on. Indal had the unique distinction of being the leader and early bird in obtaining EMS certification for three of its units.While realising the full benefits of these management tools in already certified plants, efforts are now in progress to install the EMS and get the remaining units certified shortly. The focus will be on improving employee awareness and their environmental responsibilities.

In the coming years, in addition to EMS, our plants may also go for other management systems like OHSAS 18001 for Occupational Health & Safety and SA 8000 for Social Accountability. These systems have linkage with EMS and would help in demonstrating our commitment towards sustainable development.

In short, Indal units will spare no efforts in maintaining their leadership in environmental management through systems approach.

Environmental Performance Assurance Process



This process is borne out of the commitment to make continual improvements. Every business unit will plan for environment improvement activities at the beginning of each year and implement them during the year, evaluate the performance at the year-end and ensure that the desired improvements are achieved.

Though simple, it is a powerful management tool and when practised with commitment and effective participation of employees, can bring out significant improvements and raise our environmental performance far beyond legal standards.

Thus by implementing this policy, we can expect to make our projected growth environmentally sound, surpassing the legal requirements and meeting the expectations of the society through active participation of all employees.

S V Jamble
Belgaum

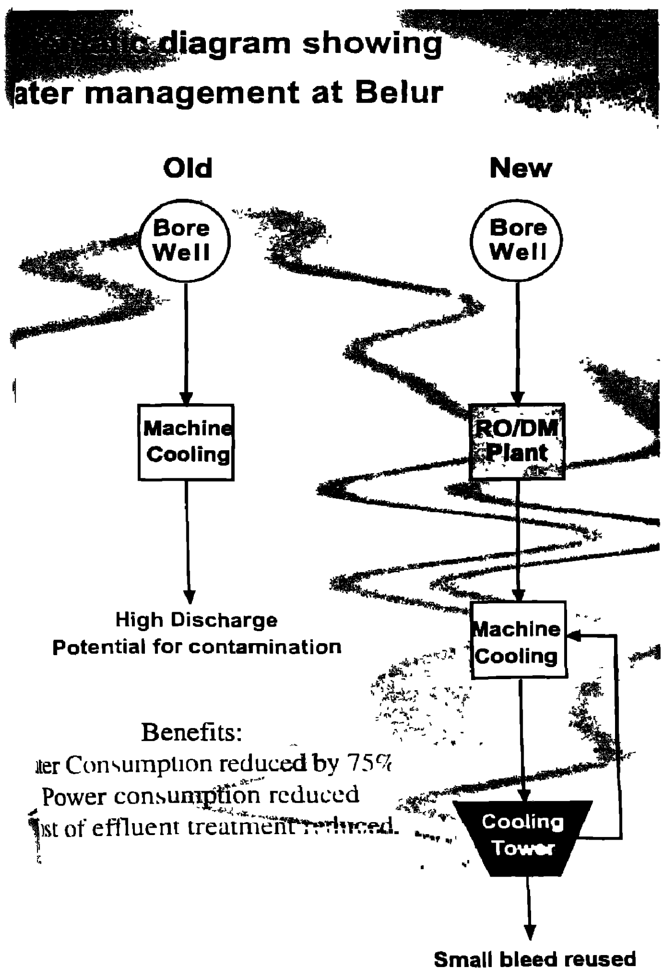
Water Conservation at Belur

A cheap yet invaluable resource

dal's pioneer sheet mill at Belur is located on the banks of the river Hooghly, near the city of Kolkata. d installed on ground that has a shallow water table. This ensures abundant quantity of water oughout the year, though hard in quality. At Belur water is used mainly for machine cooling. nsequently, since inception, water management practices adopted have resulted in discharge of ter after single use. Control of water consumption was never an issue.

th the passage of time, the importance of water management for achieving efficient use of resources e energy, oil, etc, minimising the discharge of pollution and improving the compliance with environmental islation were realised. Consequently, a comprehensive programme for water conservation and its nagement was undertaken in 1998. Salient points of this programme were:

- A water conservation audit carried out to identify areas for improvement and develop an action plan.
- Installation of a water treatment plant to source good quality water and incorporate water-recycling facilities.
- Installation of effluent treatment facilities to process balance waste water before discharge.





Effluent Treatment Plant at Belur

A state-of- the-art water demineralisation plant was installed to source adequate quantity of high purity water. Twenty-five *once- pass-through* machine cooling centers were converted to closed loop control systems with cooling towers to ensure adequate machine cooling. The hydraulic circuit was rationalised and number of cooling towers reduced from 8 to 4. Variable speed drives were installed to optimise the water requirement and minimise energy required for pumping.

This not only reduced water consumption from a level of **3266 to 750 kld (a reduction of over 75%)** but also reduced the energy required to manage the flow of large volumes of water. Out of the two tube well pumps, one was shut down permanently. The total energy reduction is estimated to be 10,000 kwh per month. Other notable benefits, though intangible, due to the use of good quality DM water, include low scaling of pipelines, efficient cooling of machines consequent to better heat transfer and low R & M cost of pipelines due to reduction in corrosion.

Being a mechanical industry, mineral oils are widely used for lubrication in operations like rolling, pressing, etc. There is a likelihood of spillage, leakage of oil and consequent escape through plant effluents. An oil spill management programme was operated at shop floor level to minimise these instances. Besides, consequent to reduction in the consumption and discharge of water the need for oil water separator was also reduced significantly. An imported belt skimmer has now been installed to ensure that the effluent discharge is always within prescribed limits.

Finally, the wastewater discharged from our canteen, washrooms etc is also treated by state-of-the-art Fluidised Bed Aerobic reactor, which requires less space, less energy and less capital investment with no regular monitoring. The plant has been designed to exceed the discharge quality standards set by the West Bengal Pollution Control Board and can enable recycling, should the need arise.

With these measures in place, Belur has marched forward in its journey towards 'Cleaner Production' methods.

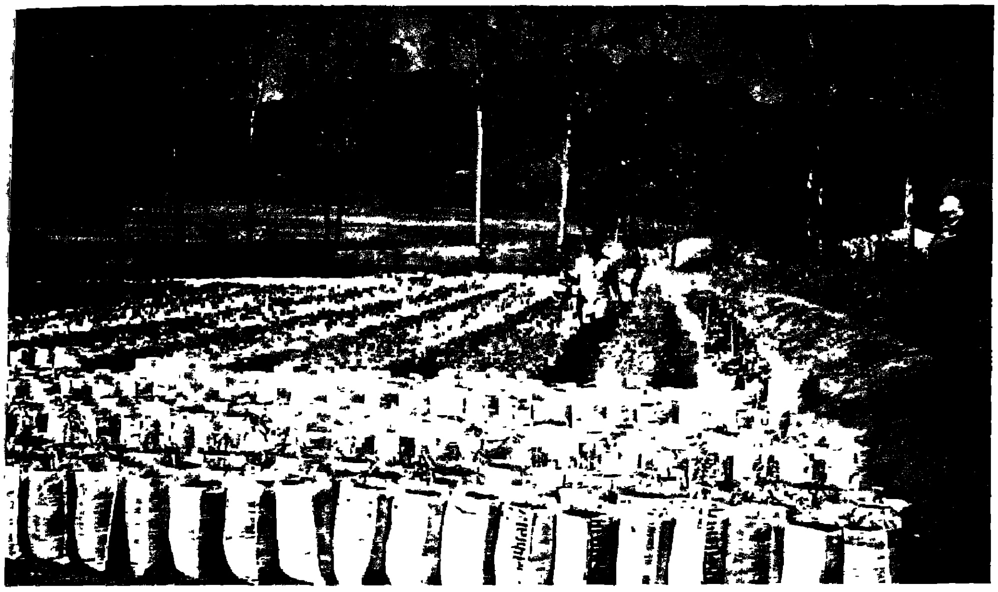
Loharadaga involves local community in its Greening Programme



A boon for local farmers:
Indal's Check Dam system makes water available for a second crop

Up in the high Bagru Hills, in the remote and under developed areas of Jharkhand (formerly Bihar), Indal's bauxite mines have been operating for the last 50 years. Though some rehabilitation of mined-out areas was carried out in the early days, the real work has been undertaken during the last five to seven years, consequent to improved understanding of the issues involved in land reclamation and green belt development.

Taking advantage of the good top soil and temperate climate, a master plan was prepared in 1994 to green the landscape with available resources.



Nuturing Saplings -
Nursery run by a local Society

In the mined-out areas on the hills, the plantation and maintenance is done by another similar society. At present this area is covered with Nashpati, Papita and Gauva trees. The treated sewage gives complete nourishment resulting in luxurious growth and high survival rate.

This included back-filling of voids generated in earlier years, effective utlisation of topsoil, plantation of tall tress for faster growth and use of treated sewage for natural plant nourishment. An interesting feature in this has been the involvement of the local community. A local society runs the nursery to nurture saplings, with training and other facilities provided by Indal. The society supplies the trees for mines rehabilitation and also distributes many fruit, fodder and wood yielding varieties among the villages



Distribution of seeds for local plantation efforts



An innovative idea has been to cultivate about three hectares of vacant and barren land for growing fuits and vegetables by Indal colony residents.

28 families have been alloted areas in this plot, enthused by healthy competition to show good growth while ensuring that their fruit and vegetable requirements are met from this area.

Advice and training to help local farmers

Seeking a better quality of life

Indal's efforts in Community Development at Lohardaga

The communities around Lohardaga Mines are predominantly tribal, under-privileged and live below poverty line. Besides, the area is also troubled by anti-social activities. To fulfil its corporate social responsibility towards this region, Indal has initiated several community development programmes. These are aimed at helping the local people attain some level of self reliance, efficient use of natural resources and develop a healthy and progressive attitude. A total of 15 villages have been adopted, benefiting around 8,000 people.



Indal sponsored vocational training : Tailoring classes for ladies

In these hill areas farmers generally take only one crop, since there are no schemes for water harvesting and lift irrigation. Realising this, garland drains and three ponds were constructed where water can be stored during rainy season and harvested in dry season. Besides, these ponds also help in recharging the wells. Few open wells were also dug out to increase water availability. A total of four pump sets were distributed for irrigating the lands. Additionally, other income generation activities included dairy farming, mushroom cultivation, fisheries (in three ponds constructed for water sourcing), garment manufacture, carpet weaving and bee keeping. These are supporting trades and have helped to substantially add to the income of local families.



Fishery Pond - a result of good water harvesting

Besides, these periodic health camps have helped almost 15000 patients, including specialised care for women, children and family planning programmes. Adult and primary education schemes have also been undertaken.

Indal at Lohardaga will continue to strive to help its host community towards a better future.

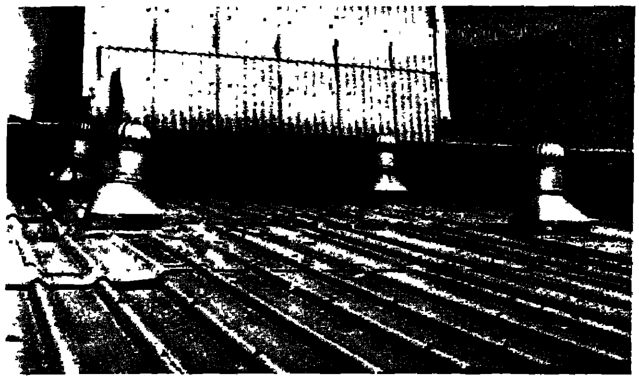


Pump set donated by Indal for better irrigation



Concern for the community: Drinking water wells installed by Indal

re than One Solution
every Environmental Problem



Turbo-ventilators atop Belgaum's Boiler House

l's 30-year old Belgaum alumina plant has a boiler e, which in the early days was supplying steam for 110 of alumina production. With production having more tripled, operating capacity of the boiler and load factors e also increased. However, fuel quality, in terms of sulphur ent has remained the same. Consequent to old age the need to keep the operating loads high, it has not n possible to change the exhaust gas lines. Therefore, fugitive dust and SO_2 emissions in the boiler house ding have increased, leading to excessive leakage. mpts to reduce the leakage were found to be difficult thus a cost effective alternative method was evolved. o-ventilators are devices installed on the roof top. They essentially fans driven by the thermal energy carried away by the gases and are sensitive to even or temperature differences. As against 50 numbers recommended by the supplier, only 25 were alled to study the effect. The number of air changes improved significantly. en the air quality was monitored before and after installation of ventilators, 75% reduction in SO_2 dust level was observed. Operatives had experienced suffocation before installation. Now they athe freely ! However, additional 15 ventilators are now being installed to reduce the levels to well w hazardous health standards.

total cost of installation was Rs. 3.6 lakhs, with no operating cost for these fans.

V. B. Jadhav / V. Govindraju.
Belgaum

Strengthening our skills in EMS Audit
26 more auditors get trained

ring up for ISO 14001 Environment Management System certification at the remaining Indal plants, a total of 26 managers from all Indal locations participated in an Environmental Auditors training programme, approved by EARA (now IEMA). The programme was conducted by CII amidst the picturesque surroundings of Adventure Club on the Mumbai-Pune Highway. The entire programme was organised and hosted by Indal Taloja.



al participants get trained in EMS Audit

The participants were essentially members of the Core Group responsible for design, installation and implementation of EMS at the respective locations. Being a cross functional group from multiple locations, the programme prcvided a forum for interaction and information sharing in terms of environmental agement practices and procedures. After receiving the inputs for four days, the participants conducted e EMS audit, at Godrej & Boyce (thanks to the courtesy of the management) and appeared for an n on the last day. The experience at Godrej was unique and an eye opener to many members in s of the contribution made by Godrej to the ecology and environment of Mumbai and the commitment e management to bring out these improvements through systems approach. Looking at the lush green unding, some of the participants refused to believe that they were in the crowded and polluted metro f Mumbai.

ite the incessant rain, all participants went back rich with inputs and experience to develop and tively operate EMS at their locations.

Mukta Joshi, Taloja

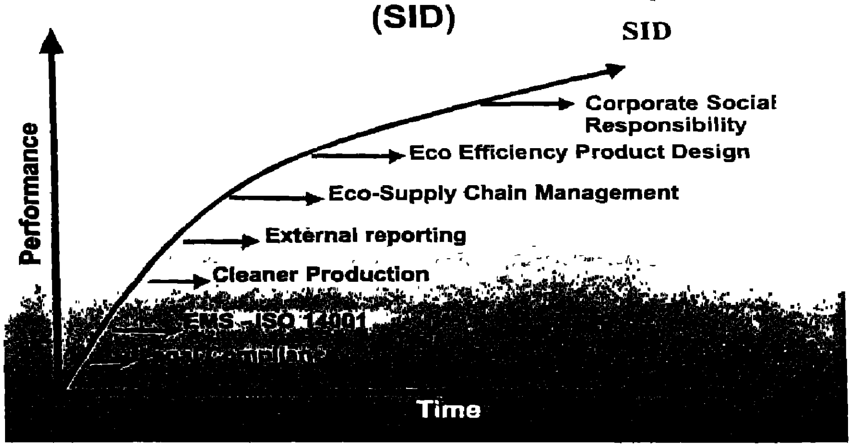
Achieving ISO 14001 Certifications
An important goal for several Indal units

Modern day industry has to demonstrate its strengths in several areas of business management in orde to become globally competitive. With faster deterioration of the 'environment', there is an increasingl urgent need to ensure 'cleaner' industrial operations and address the mounting social and legal pressure in this respect. Thus, amidst the cluster of modern management tools, ISO14001 is also emerging a one that is vital for long-term survival and growth.

In 1996-97 Indal had the unique distinction of being among the first in Asia to reach this status for it mines and power plant. Now five more Indal units are prepared for certification. These include Belgaum and Muri Alumina, Hirakud and Alupuram Smelters and the Alupuram Extrusion business

The above five units have tried to incorporate the good features from the experience gained earlier sc that instead of merely acquiring a 'certificate', a more result oriented system is installed and operated Some of the concepts included are indicator-based performance tracking on the lines of ISO 14031, cos accounting of environmental objectives, etc. We expect this system to help in improving the bottom line as well as satisfy the environmental interests o the surrounding communities.

Road Map for Sustainable Industrial Development (SID)



Principles of Sustainable Development have beer ingrained in the system design. The graph shows the approach adopted for setting environmental objectives and targets, as a journey to sustainable development, though dependent on the specific environmental aspects and impacts identified.

In the first phase, environmental programmes predominantly focus on achieving and going beyond legal compliance and working towards Cleaner Production. In the second phase, the focus may shift to eco-supply chain management and eco-product design. In some businesses, wherever possible these activities may start concurrently.

Welfare programmes have already been initiated at several locations and integrated with the EMS. Additional programmes may be taken up based on local needs.

Key environmental issues addressed in these systems are:

- Improve air quality in and around the company premises, by reducing point-source and fugitive emissions.
- Minimise consumption of water in plants and townships and recycle treated waste water to the maximum extent.
- Minimise specific consumption of energy (in all forms) and chemicals and key materials.
- Reduce consumption and maximise recycle/reuse of spent lubricants, hydraulic oils etc.
- Reduce generation and improve management of hazardous wastes, beyond legal requirements.
- Intensify efforts on green belt development to minimise the impact of GHG emissions.

With the commitment, initiative and involvement of employees, we hope to make our businesses truly sustainable in the years to come.

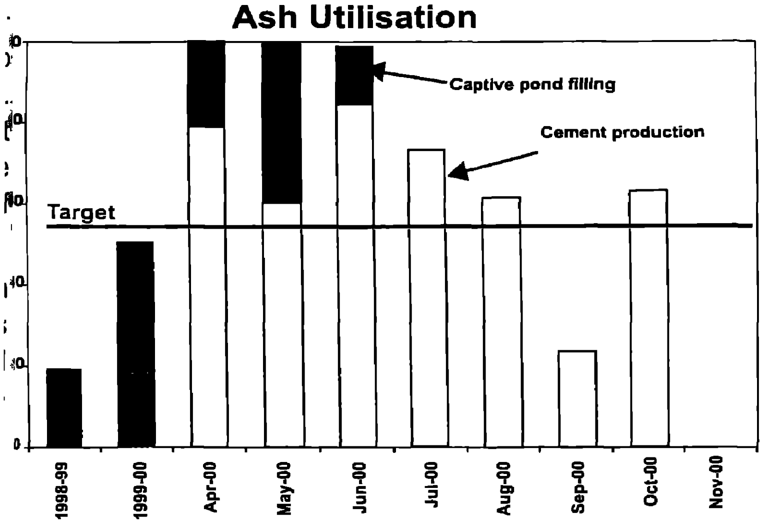
Ash and Water Management

Hirakud Power surpasses own targets

While designing EMS in1996, one of the ambitious objectives set was to promote the use of fly ash h construction material and ensure that 50% of the annual ash use level is reached by the year 2000. While this target was set, law regarding ash utilisation was not introduced and initiative was purely rom the standpoint of reduction in the land-use for ash storage and ash management in totality.

Jndeterred by the fact that cement plants are not in the vicinity of our Power Plant and were not in he best of shape economically and hence not responsive, every effort was made to improve the uality of ash in terms of reducing the unburnt carbons, improving the granulometry and assuring uniform quality. Hirakud Power collects all ash in dry form and more than 90% is fly ash. These factors attracted the producers of Pozzolana Portland Cement, despite longer distances of over 200 Km. Further, the major reason of Hirakud Power ash being popular in the market is that it is available in dry form and its quality is well maintained.

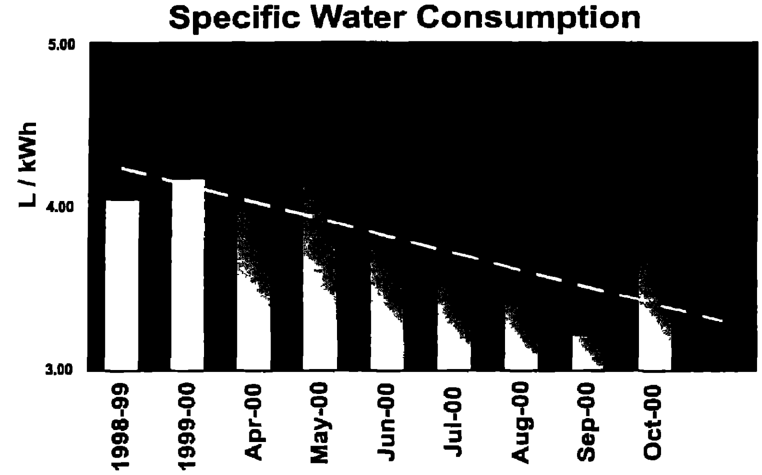
Ash Utilisation



As the graphs reveal, the offtake of ash has crossed 60% from a level of below 20 % in 1998-99. As a matter of fact, the plant would have touched 100% by now, but for our own captive requirement for filling the captive pond.

Additionally, there is also a producer of bricks romoted by us, who for the last three years as been consuming around 50 -100 tpm f ash for making 100% fly ash bricks using al-G technology. We are also at present upplying to two more brick plants on trial asis.

Specific Water Consumption



Water is another major resource used by he power industry. In the previous years, ocus was on using the waste waters like low downs, plant waste waters, etc, in all he secondary uses like coal and ash noisturising and fluoride scrubbing in melters.

n addition to this a conscious effort was lso made to reduce the water consumption n all the areas. In one such attempt the efficiency of DM plant was improved through better operational ontrols. Wastages were identified in different areas and controlled. Net result was that specific water onsumption has now come down to an all time low of around 3.5 litres / kWh. oes it not provide enough testimony to our efforts on continual improvements even after four years f obtaining ISO 14001 certification?

T. K. Mishra / S. K. Guru.

Hirakud Power

INDAL respresented at International Symposium in Japan
A visit to an 'environmentally' changed city

In preparation for the Ministerial Conference on Environment and Development in Asia & the Pacific, a Private Sector Symposium was organised in Kitakyushu, Japan during August to September 2000. This was jointly organised by the Asian Development Bank (ADB), the Economic and Social Commission for Asia & the Pacific (ESCAP), the Kitakyushu City and the United Nations Environment Programme (UNEP), bringing together prominent representatives from the private sector from all over the Asia-Pacific region.

The purpose was to review the role of the private sector in meeting the intentions of the Regional Action Programme for Environmentally Sound and Sustainable Development, 2001- 2005. The 29 delegates included private sector representatives from India, China, Thailand, Sri Lanka, Philippines and Japan, as well as senior officials from ESCAP, UNEP and ADB.

Representing the Indian private sector and Indal, Mr. S. V. Jamble was invited to deliver a keynote speech on behalf of CII and present the ***environmental challenges faced by the private sector in the third millennium*** Mr. Jamble talked about the population growth and development likely to take place in the coming generation. Since the region largely comprises the developing countries, the specific consumption of all natural resources (which is below the global average) would go up due to changing lifestyles and increasing population. The private sector has a major role to play in reducing consumption through cleaner production processes, increasing reliance on renewable resources (including their regeneration) and recycling of wastes in all forms with minimal land use for storage. Working for eco-supply chain management, eco-product design are some of the other initiatives which the private sector will be required to take in the new millennium. There will be a growing need to work in partnership with Governments, Environmental Groups and the communities at large to ensure that development and environmental quality co-exist. For meeting the above challenges, roles and responsibilities of the private sector were also highlighted.

The speech was well received and provided significant inputs for the Round Table discussion that followed. An open forum was organised on the second day to allow for public interaction and inputs to the conclusions and recommendations of the Symposium. These were forwarded to the Ministerial Conference held during 3 to 5 September at the same venue.

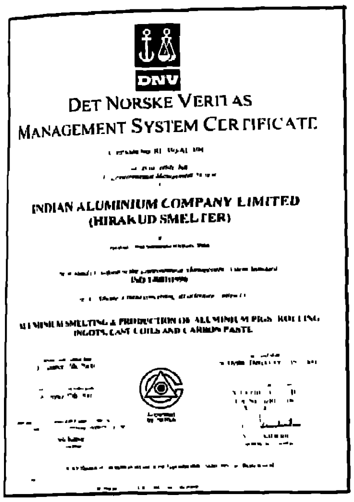
Selecting Kitakyushu to host the above programme, had a special significance. This city, which was till 1960 one of the most polluted industrial cities in Japan, has now been transformed into the cleanest city and aptly honoured by the United Nations as the "Cleanest Industrial City in the World". Concerted efforts through co-operation among industry, Government and public has brought about this unbelievable change. The major point of learning is the emerging trend of **resource re-circulating economy.**

The city strives to find an end-use for every industrial waste - converting plastic waste into garments and recycling 75% of automobiles into new products, are some examples. The city now boasts of about 100 varieties of fish coming back to "Dokai Bay," which had been rendered uninhabitable even to bacteria and the sea used to be referred to as 'Dead Sea'. A classic example to prove that *"miracles can be caused, they need not have to happen"*



Private Sector Symposium: at Kitakyushu, Japan
(Inset) SV Jamble delivering keynote address on behalf of CII

Hirakud Smelter achieves ISO 14001 EMS Certification


DET NORSKE VERITAS
MANAGEMENT SYSTEM CERTIFICATE
INDIAN ALUMINIUM COMPANY LIMITED
(HIRAKUD SMELTER)

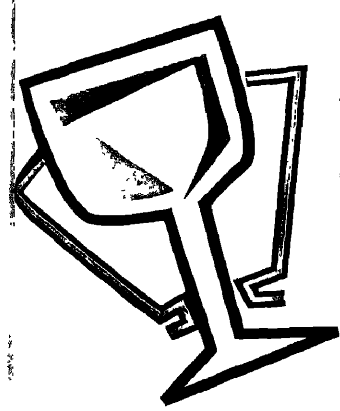
Making older technologies environmentally viable is a major challenge. Indal's Hirakud Smelter installed almost five decades ago, with old HSS technology for aluminium smelting, has undergone several technological improvements over the last decade to make it energy efficient and environmentally cleaner, in order to become become globally competitive.

Wet scrubbers to control emissions and excellent water management systems ensuring zero-discharge levels are some of the efforts that have resulted in the Smelter winning national energy conservation awards in the aluminium sector for the last five consecutive years.

its environmentally sound systems by attaining ISO 14001 Environment Management Systems Certification with the primary focus on conservation of resources and prevention of pollution.

In recognition of these efforts and after due evaluation and audit, DNV, Netherlands certified Indal Hirakud Smelter for ISO 14001 (1996) on 27 December 2000, making it the third Indal unit to achieve this.

Abhijit Pati
Hirakud Smelter



- **Durgmanwadi Mines** has won three 1st prizes constituted by the Directorate General for Mines Safety, for systematic mines working, good waste dump management and dust suppression arrangement.
- **Kasarsada Mines**, Chandgad, was awarded first prize for noise vibration survey and other scientific studies.
- National Energy Conservation Awards for the year 2000, won by :
  - **Hirakud Smelter** **(First Prize)**
  - **Belur Sheet Plant** **(Certificate of Merit)**
  - **Muri Alumina Plant** **(Consolation Prize)**
- **Hirakud Power** was presented a Certificate of Appreciation by the Orissa Pollution Control Board for implementing effective pollution control measures and adopting good environment management practices during 2000.







Community welfare

Reliance
Industries Limited

Community welfare

Reliance's concept of social responsiveness is intricately linked with people and their future

In the hamlet of Dandphata, in Raigad district of Maharashtra, women no longer trek miles to fetch potable water during the hot, summer season as they used to just a couple of years ago. A water pipe laid up to the village ensures that villagers no longer spend much of their day worrying about water scarcity.

In another remote village, Sikka in the western coast of Gujarat, a more serious worry has vanished from the lives of its inhabitants. A free, state-of-the-art, healthcare centre nearby has changed the scenario altogether. Only two years ago, the villagers needed to travel a minimum of 30 kms to reach the nearest medical centre featuring the same facilities.

Reliance is bringing about a big change in the lives of many people near its offices and plants. These are not stories that are well known. In fact, they are often overshadowed by the sheer magnitude of Reliance's other activities – its mega projects, its financial wizardry, its superb operational skills.... But these are the stories which are bringing about a quantum change in the quality of life of people in direct and simple ways.

Improving the quality of life



Perhaps the most overlooked story is the transformation that has taken place in each of the areas where Reliance has set up its plants. Almost from the day work begins at the plant site, a dedicated team starts its own project on improving the quality of life in the surrounding villages.

In fact, at Jamnagar where it has built the world's largest grassroots refinery-cum-petrochemical and energy complex, Reliance started community development work even before starting the construction work.

In eight villages: Motikhavdi, Nanikhavdi, Meghpar, Sikka, Padana, Gagava, Pipdi and Nana Lakhia, Reliance began large scale development activities about two years ago. The health, hygiene and educational facilities in all the villages have been upgraded and work on community development is in full-steam.

Reliance has already built water supply tanks and cattle sheds or gaushalas in most of the villages and has arranged for free cow fodder. Fulfilling the long held wishes of the villagers, several temples and community halls have been built. More than all these, Reliance is helping the youth in the villages to become self-sufficient by providing them with better means for livelihood.

After the devastating cyclone that hit Jamnagar in June 1998, Reliance carried out a large scale relief operation that covered the entire Jamnagar city and neighbouring villages. Over 2,000 light poles were erected within just 3 days power was supplied. 7 medical centres and 4 ambulances carried out medical relief operations throughout the region and free medicines were also distributed besides supplying essential commodities to the entire area.

At Hazira, also in Gujarat, Reliance is into community development In Mora village Reliance has provided the water supply arrangement including overhead tank and a distribution network. The maintenance of the facilities has also been undertaken by Reliance. 20 pucca houses were handed over to landless labourers of the village.



To overcome acute power shortage in Mora, Reliance has financed the installation of transformer. It has also improved drainage in Kawas, Bhatpore, Limla and Ichhapore.

At Patalganga in Maharashtra, Reliance has been taking part in various welfare schemes for the last 15 years, like providing water tanks, modern sanitation facilities and cheap loans to the villagers through cooperatives. Reliance has helped to construct balwadis or creches for the village children in Patalganga.

Education



Education remains a thrust area for Reliance's social activities right from the beginning. Schools set up by Reliance at Patalganga, Hazira and Jamnagar cater to local children apart from those of Reliance employees.

The Dhirubhai Ambani Foundation and the J. H. Ambani Education Trust also undertake educational support activities like scholarships, grants and awards for deserving students for further education Already 1400 students have received merit SSC merit rewards and undergraduate scholarships in Maharashtra, Gujarat, Goa and the union territories of Daman, Diu, Dadra and Nagar Haveli, since the inception of the foundation in 1996. Three toppers from each district are given rewards and scholarships.

This year a special award and scholarship scheme has been introduced for district toppers in the handicapped category, to help the physically challenged students obtain equal opportunities in education. Apart from rewarding meritorious students, the foundation also assists them in their overall development by organising regular seminars on various aspects like personality development, information technology which are not normally covered in academic curriculum

Recently Reliance has joined hands with other corporate houses to set up a world class business school in India, in association with the Wharton and Kellogg business schools of USA.

Reliance has endowed a chair for Corporate Governance in the National Law School, the premier legal education institute in India. The Reliance Chair will coordinate studies, academic courses, training, curriculum development, publication, information and documentation in Corporate Laws and Governance.

It also has a scheme to send books to 1,000 libraries in and around the district.In Patalganga, Reliance has started a teacher training project called Anand-dayee Shikshan, with UNICEF and the Raigad zilla parishad covering all the 2,500 primary schools of zilla parishad and has trained more than 5,000 teachers and officers. Reliance is sponsoring certificate and diploma courses in Hospital and Community Health and Tailoring for the village youth in Patalganga. In Hazira too, young village people have been given technical training. Some of the village children have been sponsored for the SSC examinations.

Health care

Reliance has been making substantial contribution to healthcare of common people. All medical centres of Reliance in sites cater to the local population apart from employees and their families.

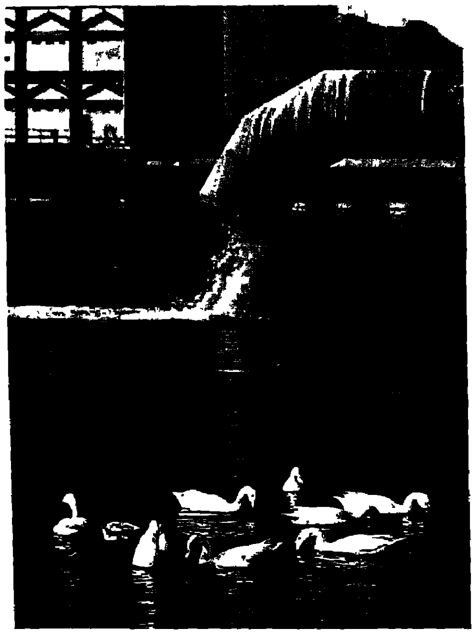
In Lodhivali near Patalganga, Reliance has inaugurated a 82 bed, state-of-the-art hospital dedicated to free trauma care of accident victims on the accident prone Mumbai-Pune National highway Apart from trauma care, the Dhirubhai Ambani Hospital will treat the industrial workers as well as other local people in nearly all areas of medicine and surgery.



At Motikhavdi in Jamnagar, Reliance has opened a free round-the-clock medical centre. All villages are covered by mobile health vans and regular free medical camps.

Reliance made a substantial contribution to upgrade the Sir Hurkisondas Nurrotumdas (HN) Hospital in Mumbai, well-known in treating the middle and lower middle strata of society and started action to make it world class Health care centre.

Recently a child-friendly, world-class children's ward has been inaugurated in HN hospital, which is the only one of its kind in Mumbai. This is one of the steps taken by Reliance to bring quality health care to the people of Mumbai.



ℎ... ı their own feet. In Patalganga, Reliance ... Mahila Mandals or women's cooperatives. ... ...uses a host of activities ranging from maintenance of water tan... the villages, micro-savings and loan schemes, supervision of balwadis to running the super bazaar in Lodhıvali colony. Reliance also sponsors vocational training courses for women.

Reliance holds the annual Vimal "Mother-in-law contest" where ıt rewards the best mother-in-law from entries sent by the daughter-in-laws. This is an attempt by Reliance to forge closer famıly ties and also to recognıse the contribution of women ın the family.

Environment friendly facilities

As a petrochemical major, Reliance is aware of its responsıbility towards creating, maintaining and ensurıng a safe and clean environment. A state-of-the-art effluent treatment plant at Hazira has won the maximum water cess rebate consecutively for the fifth year. The new effluent treatment facilities of the PTA plant at Hazıra are the first of their kind ın Indıa. Even in Jamnagar, environment is given top priority. It utilises desalinated sea water and recycled water ıs used for horticulture by effluent treatment.

In Jamnagar, Reliance has undertaken massive greening activities covering 1000 acres of land in and around its refinery complex. It comprises a mix of agroforestry with trees like teak and sewan, green belt of neem and other species, mangrove and landscaping. At Patalganga, the effluent recycling plant has been repeatedly winning the Special Award for Energy Conservation instituted by the Government of Indıa.

Nurturing the arts



Reliance organises an annual art exhibition called the Harmony Show which brings together the works of artists across the country. In 1998 it instituted two awards: "the Harmony Excellence Award for the Emerging Artist of the year" and the "Harmony Heritage Award for Lifetime Contribution in Literature, Art & Culture." Two young artists, Anju Dodiya and Paresh Maity were awarded "the Harmony Excellence Award for the Emerging Artist of the year." and Ebrahim Alkazi received the Haromony Heritage Award for Lifetime Contribution in Literature, Arts & Culture, in 1999.

Preserving heritage

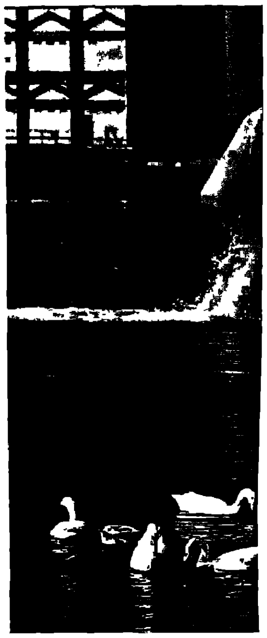


Reliance joined hands recently with Archaeological Survey of India (ASI), UNESCO, the Indian National Trust for Art Cultural Heritage (INTACH) and the Govt. of Maharashtra to preserve, beautify and to improve the socio-economic conditions of the Elephanta Island, a world heritage site of the breathtaking rock-cut caves dedicated to Lord Shiva. Reliance helped to upgrade visitor facilities and setting up of an Elephanta Site Museum.

Reliance
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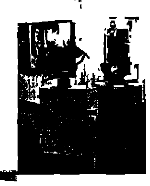
In Jamnagar, Reliance
refinery complex. It cc
species, mangrove and
Special Award for Ener

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Nurturing the arts

Reliance organises an ar
which brings together tl
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Emerging Artist of the
Lifetime Contribution
artists, Anju Dodiya an
Excellence Award for tl
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